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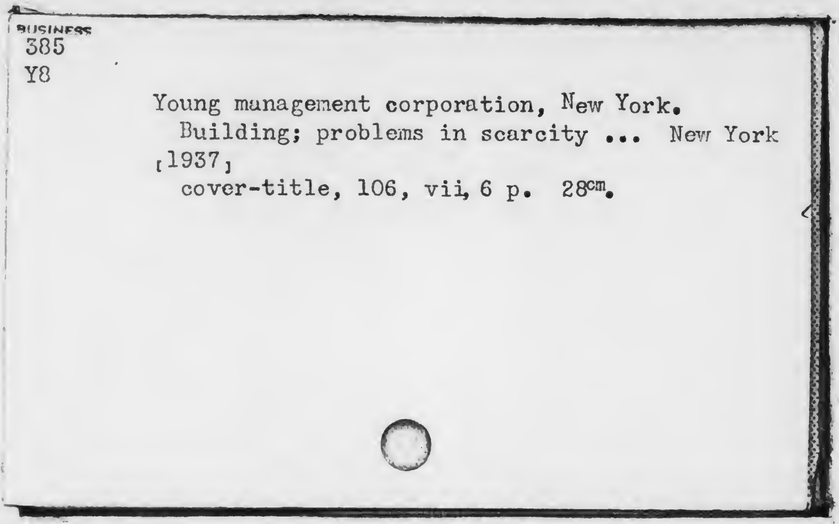

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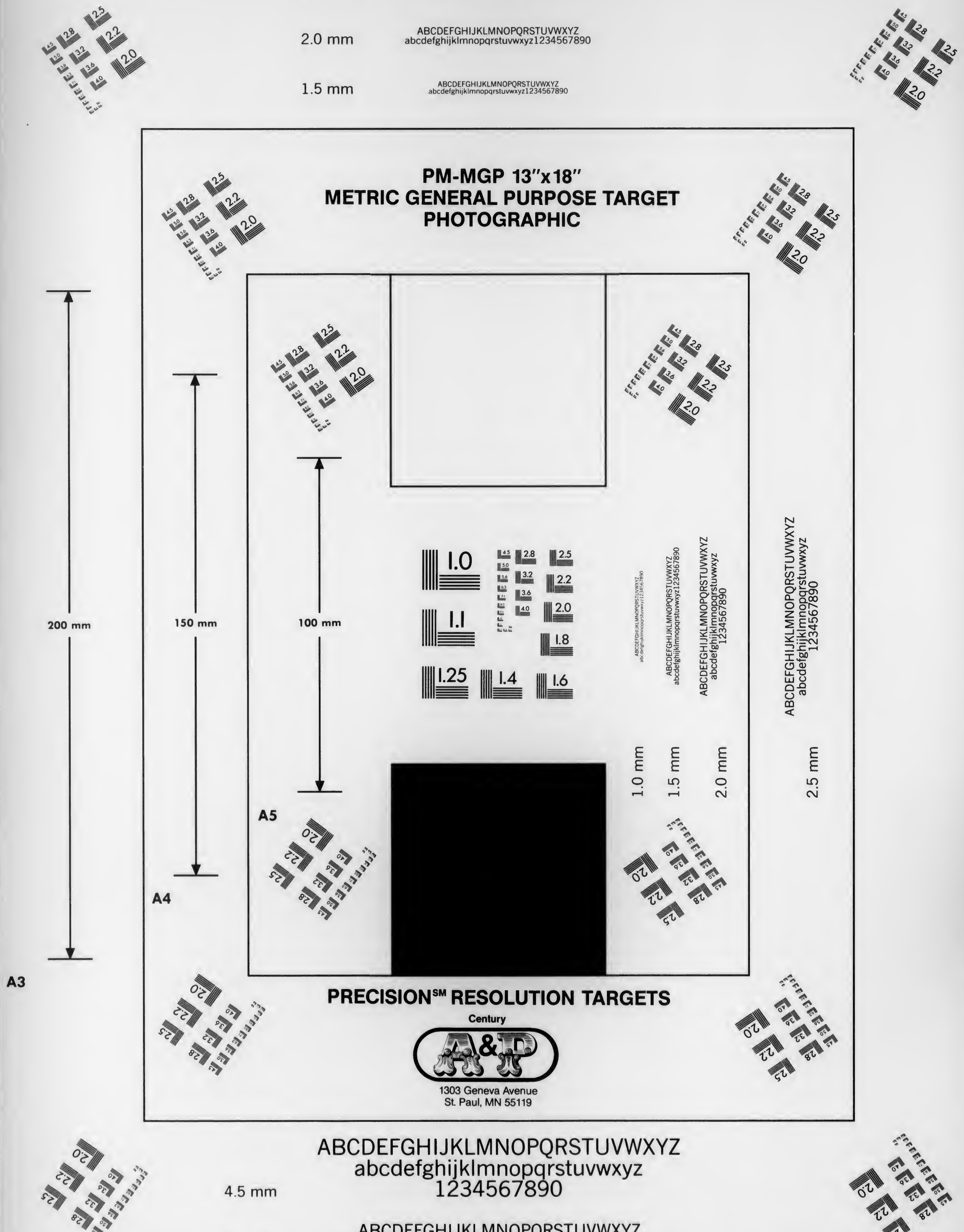

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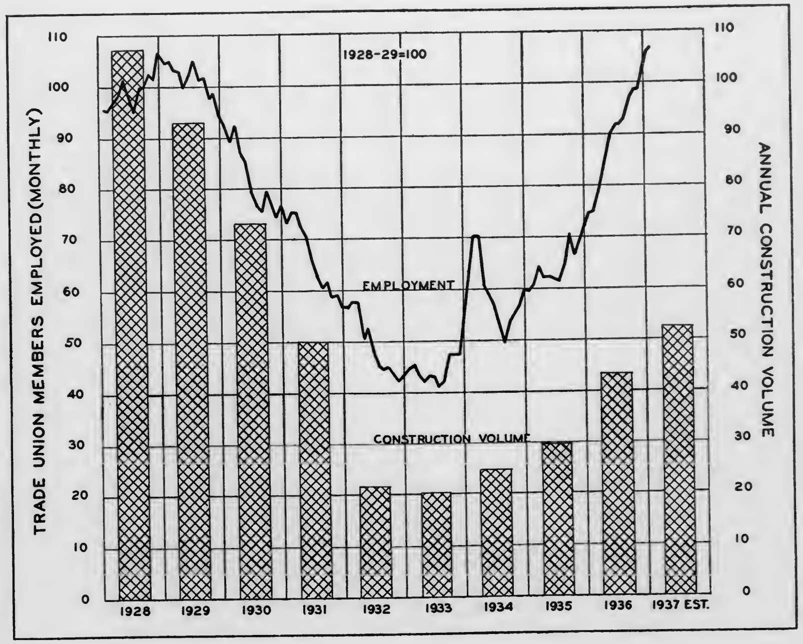

YOUNG MANAGEMENT CORPORATION
Managers of Investment Funds
60 East 42nd Street
New York

BUILDING

PROBLEMS IN SCARCITY

Business
D385
Y8

R. Oct. 28, 1937 | HED

INTRODUCTORY STATEMENT

The foundations of American business were laid during recurring waves of expansion, settlement, and construction--a general process which came to be known as "the opening of the West".

At the bottom of our recent depression it was frequently remarked that capitalism was no longer in a position to expand because there was no longer a frontier and no great new industry in need of building, financing, and exploitation. Shrewd individuals pointed out that the World War absorbed the energies which up to that time had been used in "opening the West". After the World War the automobile made it possible to build suburban America and contribute to the experience of the city citizen the sensation of pioneering. It has been thought that the adaption of our civilization to the automobile absorbed a portion of the national energy comparable both to "opening the West" and the World War.

The history of American capitalism suggests that it needs vigorous exercise to keep healthy. After a number of years of lassitude, industry is active without having lustily entered upon a program comparable with the accomplishments upon which it grew. In this study there is delineated a picture of an antiquated industry calling for the technical genius which has made America great. There is portrayed here an inadequacy of homes and housing and an opportunity to raise the American standard of living. Hidden in this situation lies the prospect of new values which for the moment, however, are difficult to capitalize and difficult to weave into our financial structure.

This study comes to the conclusion that a very great volume of building is needed which could stimulate general business recovery more than PWA, CCC, WPA, and AAA together; and which could last longer than filling depression shortages. Yet the evidence in this report indicates that in the broadest sense the building industry will not provide fulfillment soon.

C. W. YOUNG
President.

June, 1937

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SUMMARY

BUILDING IS A DISORGANIZED INDUSTRY WHICH IS OUT OF STEP WITH THE MACHINE AGE.

1) Building is an industry of small-scale units operating without coordination and with a maximum of waste.
2) Not until the present time has the industry merchandised its product.
3) After the Industrial Revolution there were phenomenal increases in the efficiency of nearly every industry except construction.
4) In the long run building activity is geared closely to population trends. Over shorter periods its volume falls into periodic waves of activity.

TOTAL CONSTRUCTION VOLUME WILL INCREASE FOR SEVERAL YEARS.

1) There are no complete and adequate measures of construction and building in the United States.
2) Contract construction declined in 1933 to 20% of the average for the years 1925-28. Without Federal aid the total would have been still lower.
3) Contract construction in 1937 will be little more than one-half of the average for the years 1925-28.
4) Building volume will gradually increase to a peak in the early 1940s.
5) Privately financed construction is increasing; publicly financed is decreasing in importance.

NON-RESIDENTIAL CONSTRUCTION WILL SHOW ONLY MINOR GAINS IN 1937.

1) The high vacancy ratio prevents general nation-wide activity in commercial and office building construction.
2) Industrial construction is increasing along with corporation profits. There is little new financing for construction.
3) Private utility construction is increasing.
4) Public building in 1937 will be less than in 1936.

RESIDENTIAL BUILDING IS LEADING THE INDUSTRY UPWARD.

1) Our need for new homes is tremendous. We should build 900,000 dwelling units annually for the next five years.
2) There is little likelihood that we can build enough to take care of our needs.

THE HOUSING PROBLEM IS BECOMING MORE PRESSING.

1) The disorganization and the inefficiency of the construction industry is at its worst in residential building.
2) There has been little residential building except what is necessary to take care of population growth. Since 1920 we have turned over our housing at the incredible rate of only once in 142 years.
3) Less than half of American homes measure up to minimum standards of health and decency.
4) The American housing problem is not a temporary one arising from the depression.
5) Our real housing problem consists of the fact that housing has been going backward instead of forward in the United States.

A LABOR SHORTAGE IS APPROACHING.

1) Building volume this year will be about half of previous good years.
2) Building labor supply is as fully employed as in 1928 and 1929.
3) Wages are advancing.
4) A survey made by Young Management indicates that building labor supply is inadequate to lift construction to levels of previous good years.

RENTS WILL CONTINUE TO ADVANCE.

1) Building costs are advancing.
2) We cannot increase our housing supply fast enough to offset housing demand.

THE BUILDING BOOM IS OVER-RATED.

1) Our real estate debt level is 100% higher than it was in 1922.
2) Total public and private debts are at the highest point in our history.
3) Wage rates are responding to the scarcity factor.
4) In recent months building costs have been advancing faster than purchasing power.
5) The real estate market has not been "cleaned up". A large number of properties await foreclosure.
6) In contrast to conditions of the last cycle, rising food costs are competing with rising rental costs for the consumer's dollar.
7) Much of the construction of the last cycle was financed unsoundly. Until we find a substitute for real estate mortgage bonds and certificated mortgages, building volume will tend to lag.

INTRODUCTION

Building is one of man's oldest activities. Its beginning is lost in the mists of the stone age when the cave dwellers first piled stones and broke boughs from the forest trees to form their huts. In the development of the building art it is interesting to note the similarity between ancient tools and materials and those used today. Very early man learned to use flint axes to form timber and to shape stones. Early habitations were formed of mud and wood and through all history this branch of construction has developed generally along the lines of lumber and masonry.

From merely a shelter of one room, building advanced through successive stages of adornment, endurance, comfort and safety. Through subdivision and inclusion of accessories on a background of changing social customs, housing has become a complex mechanism in which the original function of shelter has been overshadowed by the conveniences and luxuries that have come to be associated with it.

This evolution has involved complicated problems of management and workmanship which led to the division of labor into specialized crafts, but the organization of the industry has remained essentially the same. The great changes which have revolutionized transportation and manufacturing since the Industrial Revolution have not had much effect on the housing field. There has been much improvement in equipment, such as plumbing and heating, lighting, ventilation and improved building materials, but the actual methods of construction have changed little. The industry's unemployment problems have not been technological in nature. Building stands today as the one large handicraft industry in a machine age.

This is the background for the building problem in the United States which is explored in this report. While no industry except agriculture exceeds building in its social implications, we shall deal with this phase of the problem only as it becomes necessary to comment upon a curious mixture of socially constructive purposes and economically destructive activities.

GENERAL COMMENTS ON CONSTRUCTION INDUSTRY

The activities classed as construction are directed at providing and maintaining the entire physical plant of the nation. The size of the industry is variously estimated, ranging in good years from $7,000,000,000 to $11,000,000,000 depending upon the comprehensiveness of the term "construction". The industry can be taken to cover the entire volume of construction going on in the country inclusive of force account work and maintenance or it can be defined as merely contract construction.

The former would include all expenditures for housing and building of any kind, for roads and streets, irrigation projects, railroad tunnels, and other projects generally called "public works" or "public utilities". There are no accurate and complete records of construction activity in the United States defining the term in this broad sense. There are several estimates available, however.* One of these estimates is given in chart 5 and in the appendix, page I. Total construction can be classified -

1) As to ownership, that is, public or private, and
2) As to organization carrying on the work, that is, "force account" or contract.

The estimates of total construction in chart 5 include all of these classifications.

"Force account" construction represents the operations undertaken by various industries and governmental bodies with their own employees, whereas contract construction includes all operations performed by construction firms under contract with the one for whom the project is undertaken. Much of the work involved in the building and maintenance of roads is carried on by government employees. Railroad and communication companies perform most of their construction work with their own forces. The United States Department of Commerce has estimated that force account construction was probably 33% to 40% of the total construction activity in 1929.

---

* These include the estimates of the National Bureau of Economic Research, Federal Employment Stabilization Board, The Engineering News Record and the Works Progress Administration.

In most discussions, however, the term "construction industry" is not used so inclusively - referring only to contract construction. The Bureau of the Census defines the industry as "construction by contractors". This excludes all force account work. Private agencies which compile data on volume trends generally base their estimates on contracts awarded or some figure equivalent to contracts awarded. The data compiled by these agencies varies widely in the reported amount of construction taking place. In the main these differences are due to variations in the amount of public and private or force account and contract work included in the estimates.

The term "building industry", as we shall subsequently refer to it in this discussion, narrows the scope of the field further. Building is differentiated from construction in that shelter of some sort is also implied. This excludes such projects as roads, river and harbor work. The building industry then refers to the activities of organizations engaged in the erection of buildings. Most concerns (except cement companies) whose securities are publicly traded-in, market their products chiefly to the building industry.

In any discussion of the industry it is important to bear in mind these differences of definition. In this study all construction activity in the United States will be referred to as "total estimated construction in the United States"; the term "construction industry" will refer to contract construction; and the term "building industry" to that phase of the construction industry which is engaged in the erection of buildings.

Organization of the Industry

The present day structure of American homes has changed but slightly for generations. It is still mostly a combination of timber framing and masonry fabricated on the building site and pieced together by the "cut-try-and-cut again" method.

The business of erecting houses has responded less than any other industry to the great underlying changes in transportation and manufacturing technique set in motion by the Industrial Revolution. Actual methods of house construction remain about the same in an industrial world whose markets have been based on mass production of standardized units at prices reflecting increasing benefits of extensive research. Any changes of employment in the industry have not been technological in nature.

Back as far as our records go about the same proportion of man's effort and time has been given to the subject of housing - about one-tenth to one-fifth. The general form and character of the industry go back to the Guilds of the Middle Ages.

The building industry, unlike oil, shoes or steel, does not represent a clear-cut entity. It is merely the total of a large number of more or less related industries. It is neither centralized nor organized. It does not even have a statistical technique that contributes to the solution of its problems. It has given practically no consideration to the merchandizing of its product. Instead of single organizations coordinating activities to produce a final product in quantity and ready for use by the buyer, building operations are divided among different sub-groups as disorganized as the actual work of construction itself. Building has been called the most disorganized industry - next to agriculture.

The factory process does not apply to building. For the most part, fabrication is not conducted in central establishments with a permanent labor force from which the finished product is sent to the retailer or consumer. The industry is predominantly an industry of small units. The Census of Construction of 1929 prepared by the Census Bureau, reported that only 30,600 establishments out of a total of 145,000 covered had an annual volume of business of $25,000 or more. The breakdown of the gross volume of contract business for these establishments was as follows:

Type of Establishment	Number of Establishments	Average Annual Volume	Total Volume of Business
Small contractors	113,799	$ 9,000	$1,035,453,000
Sub-contractors	15,081	125,000	1,879,376,000
Operative builders	750	205,000	153,524,000
General contractors	14,766	286,000	4,217,367,000
	144,396		7,285,720,000

Of the total work done by small contractors about 90% was in building and 5% in highway construction. Approximately 65% of the total for the general contractors was in building, 15% in highway and street work and 13% in public works and utilities.

Most of the work of the group which averaged only $9,000 per establishment falls in the residential building field and this is the part of the industry where the most inefficiency is found. The factory process finds no counterpart in the operations of these local builders conducting what may be called a small retail business. Use of labor-saving devices by these establishments is the exception. Frequently there is no permanently maintained labor force. Much of the labor is recruited for each job. The average contractor makes very small quantity purchases. Many are of the shoe-string type whose limited capital does not permit them to save by discounting bills. Materials are dumped on the building site to be worked over by hand-manufacture. There is usually a maximum waste in handling

these materials.

According to the Census of Construction, about 26% of the total work was carried on by sub-contractors. These sub-groups do not always work together to turn out the best product possible at the lowest cost. More often each group is interested only in self-promotion. This "sub-group consciousness" has complicated the building process still further.

Operative builders are not very important in the entire building picture , for in 1929 they accounted for only 2% of the total volume of business done. However, their importance varies quite sharply between regions, for, in general, they perform a greater volume of building in the East than they do in the South and West. Most of the work of this group falls in the dwelling house field. Very often such building has been connected with the promotion of development projects and has resulted in shoddy construction which has in many areas reacted on the confidence of the public in such builders. Yet this type of construction offers possibilities for cost reduction. We have indicated above that the very small contractor who builds one or two houses per year operates at a cost disadvantage because of an inherent inability to take advantage of devices and means to increase the efficiency of its operations.

Given the will to do so, the operative builder can realize on some of these potentialities through a better coordination of labor and materials supply, better organization and integration. Frequently material cost reductions can be made in this way.

There is one division of American building to which these observations of inefficiency apply with less force than in the residential field. That field is the erection of large office buildings, apartments, schools, etc. The problem of centralized control over the building job has been solved reasonably well. This superior organization has come about naturally through a greater application of standardization. In other words this branch of building is more nearly in keeping with the development of the machine age than any other.

The cost of nearly every article entering the family budget, except housing, has undergone a significant change. The factory technique has been applied to practically every item from food to beauty treatments.

In a broad way the efficiency of an industry can be measured by the change in its output per worker. The trend of individual output reflects the trend of efficiency of labor methods, organization and capital equipment. While this measures the increase in efficiency derived from all sources, the sensational increase has been due to an increasing application of capital to the manufacturing process.

Phenomenal increases have been shown in the output per worker of the common articles in everyday use. The U. S. Bureau of Labor Statistics has estimated that 62.4 man hours per acre were required for the production of wheat in 1850. By 1924 this had declined to 1.6 man hours. From 1838 to 1932 production of cotton sheeting per operative increased about 600%. It required 1832 hours of labor time in 1863 to produce 100 pairs of shoes. In 1923 it required only 107 hours, or a relative increase in productivity per hour of about 16 times.

The trend in per man output for the first quarter of the present century is shown by the estimates of the National Bureau of Economic Research:

Industry	% Increase
Agriculture	53%
Mining	99%
Manufacturing	42½%
Transportation	56%
Average	76%

Perhaps the best example of the items included in the manufacturing total above is the automobile industry. In 1899 the output per worker per year was 1.56 vehicles. In 1925 this advanced to 9.76, or an increase of more than 500%.

The experience in the building industry, however, contrasts sharply with these general developments. Data is not available to make comparisons as precise as those described above, but the evidence is definite and clear-cut that there has been no increase in efficiency in the building process comparable with the gains in autos, steel, and wheat. Immediately after the World War there was a severe shortage in labor in the building trades accompanying the general disorganization of working forces of the War period. As a result productivity in building construction decreased measurably. In 1920 it is estimated that bricklayers on ordinary wall work laid substantially fewer bricks per eight hour day than prior to the World War.

In a few years productivity was back to the pre-war level. In recent years of declining activity in the industry there has been a decided increase in labor productivity as employment declined. The Engineering News Record has estimated that from 1926 to 1929 the gain in productivity was 6%. It is estimated further that productivity of building trades labor, taking 1913 as 100, was about 111 in 1926, 116 in 1928, and 139 in 1931. Since the data is based upon

building activity in New York state, in which a large proportion consists of large buildings where modern methods are extensively employed, it seems reasonable to conclude that there has not been a corresponding gain in residential productivity.

After an exhaustive study of all of the data available on this subject Mr. A. F. Bemis* has estimated that productivity of labor in dwelling house construction in 1920 was estimated to be about 60% of the pre-war period. Subsequently during the twenties the decline of this period was narrowed but in 1927 it was still slightly below the 1913-14 period. This estimate reflects changes in mechanical factors and management, as well as labor efficiency.

These observations do not hold true for the building supply industry as contrasted with the actual job of constructing dwelling houses. The manufacture of many articles which enter into residential construction has been transferred from handicraft to factory methods with a gain in efficiency comparable to the gain reported for all manufacturing industries. But this gain has not been passed on to the home builder in the process of manufacturing these articles into a house.

* The Economics of Shelter.

Building Cycles

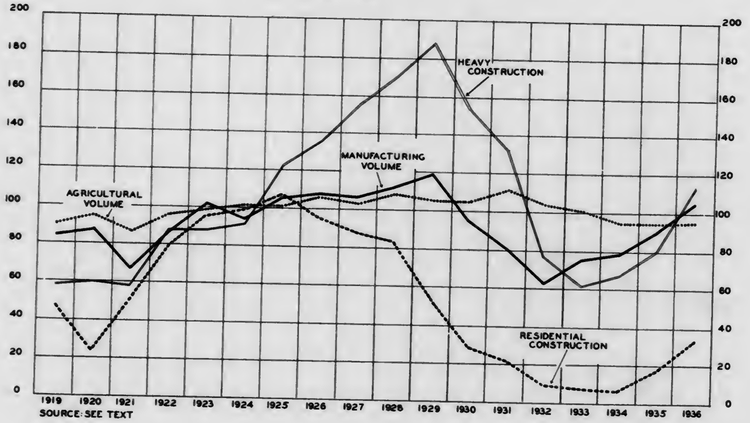
Building activity holds a fairly steady relationship to population in terms of very long averages, but from year to year its volume gyrates more widely than that of most industries. Over a long period of time building has absorbed about the same proportion of man's total effort. Building workers per unit of population have remained nearly constant in the United States. It is not surprising, therefore, that building fluctuations appear to many to be both unintelligible and inexplicable.

While we still do not know enough about construction and general economics to relate the two closely, our knowledge of the interrelation of building with social, economic and governmental forces has expanded considerably in recent years. It is to be hoped that we continue to increase our understanding of these fluctuations for there is no field offering greater opportunity to contribute to economic stability. Chart 1 compares volume trends in building with other important divisions of our economic life during the last major economic cycle.

CHART ONE

BUILDING COMPARED WITH MANUFACTURING AND AGRICULTURAL PRODUCTION

1923-25=100



SOURCE: SEE TEXT

The index of heavy construction is based upon engineering construction contracts awarded, as reported by the Engineering News Record, corrected for changes in costs. Residential construction is based upon the Brookings Institution estimates of dwelling units provided in the United States from 1920 through 1936, with the year 1919 estimated. The indexes of agricultural and manufacturing volume were calculated by the U. S. Department of Agriculture and Federal Reserve Board, respectively.

The wide amplitude of the building cycle contrasts sharply with that of agriculture and manufacturing, especially the former. It will be noted that there was not a uniform movement as between residential and engineering construction. Using 1923 to 1925 as a base of 100 in all cases, the number of points change reported during the cycle from the highest point to the lowest was as follows:

Agriculture	21 points
Manufacturing	56 "
Residential Building . .	100 "
Heavy Construction . . .	130 "

The greater amplitude in heavy engineering construction than in residential is due chiefly to a higher peak in the favorable period because residential construction approached closer to the zero level in 1933 than other types of building.

These fluctuations have a wider meaning than even their space range implies. They suggest the different approach of each industry to the job of fitting its volume into the general business movement. In agriculture, volume is maintained fairly constant and output is moved into consumption through the variable factor of price while in manufacturing price is not so free to change quickly and fully in order to move goods into consumption without comparatively sharp volume fluctuations. The real antithesis of agriculture is building. Here price changes little and very slowly so that adjustment to general business conditions is made by exceedingly large volume changes.

In agriculture and to a lesser extent in manufacturing, prices are brought down to a level where people can buy them in quantity. But in building we see periodically the spectacle of a great essential industry starving with high prices and a declining volume. In such a period there appears to be an endless circle. Relatively high prices affect adversely the nation's ability to carry on a large volume of building, and a declining volume leads builders and labor to resist declining prices. Customarily the circle has been broken in the past by purchasing power rising to the building price level.

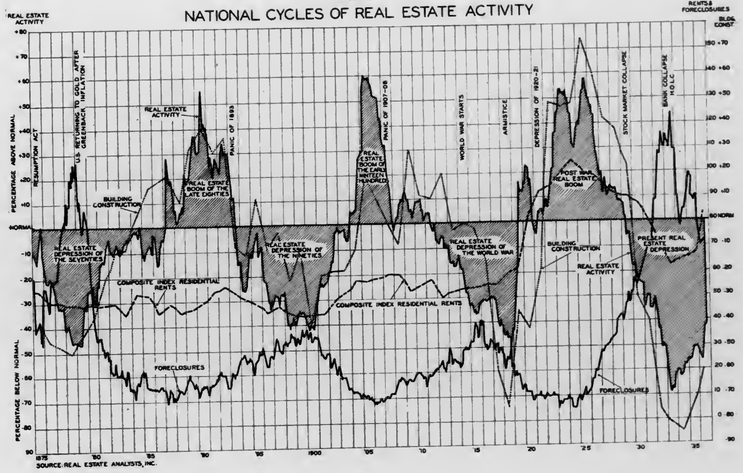
In the down turn of the business cycle ability to buy or finance new building declines faster than costs decline. In the upturn of the general cycle building responds when purchasing power advances faster than costs increase. It maintains a good volume so long as these elements are in a favorable relationship. High building costs is a relative term whose influence can restrict volume both at the bottom and the top of the building cycle.

Originally these differences in production and price policies of agriculture, manufacturing and building were probably due to differences in the durability of the product turned out. We believe, however, that the present status reflects something more than this fundamental difference. It reflects a disorganized building industry static with traditional approach that has not kept pace with the changing industrial technique of mass production. We are here referring to the fabricating job of putting materials together into a physical structure -- not to the manufacturing process of many of the materials themselves. Building is characterized by handicraft repetitive operations carried out on the construction site. Each product turned out is an individual one which varies from others in size, quality, materials used, workmanship, etc. The result is a nearly complete absence of uniform units of building.

A longer range comparison of building cycles with general business cycles is given in Chart 2. This chart shows the three great waves in building activity since 1875. The length of each of these cycles was about one business generation. Measuring the cycle from low point to low point the first got under way in the late 1870's and lasted until the turn of the century. The second cycle was completed with the unusually low volume of building during the World War. The third major cycle lasted until 1933. While each of these cycles ran its course in a general business background which differed from the others, their similarity of pattern is striking, even if allowance is made for the influence that the World War had on building activity.

CHART TWO

NATIONAL CYCLES OF REAL ESTATE ACTIVITY



SOURCE: REAL ESTATE ANALYSTS, INC.

It is dangerous perhaps in the type of dynamic movement that we are having now to draw conclusions entirely from historical pattern, but the habits of the building cycle are such that we can reasonably look for a peak in the present upward movement of the building cycle in the early 1940's. Attention is called to the fact that this chart and this conclusion refer to private building. As we have seen in the last major cycle, the peak of total construction may not coincide with the peak of its major division.

When one attempts to relate these major waves of building activity to a general business index, difficulty is encountered at once. There is no pattern of relationship existing between the two. The two series may move independently both in minor movements and in major cycles. Building cycles not only differ in duration of their movement, but their deviation from an assumed normal may be two or three times as great. Building pursued an independent trend during the War period. Its deviation above normal during the twenties was greater than average, and since the recent recovery movement started building has gone largely along its own way. This does not deny the critical importance of the direction of building volume at turning points in business. Undoubtedly the major building cycles do affect the shape and duration of business cycles. Building is probably the most significant factor when the direction of business movement is in balance. After a cyclical movement in business gets under way, however, it may continue its trend for some time because of the strength of other factors in the situation.

Many attempts have been made to explain fluctuations in building activity by reference to one of the many factors that are basic, such as -

1) Costs,
2) Interest rates,
3) Supply of money available in the mortgage market,
4) Rental trends,
5) The trend of national income, and
6) Population growth.

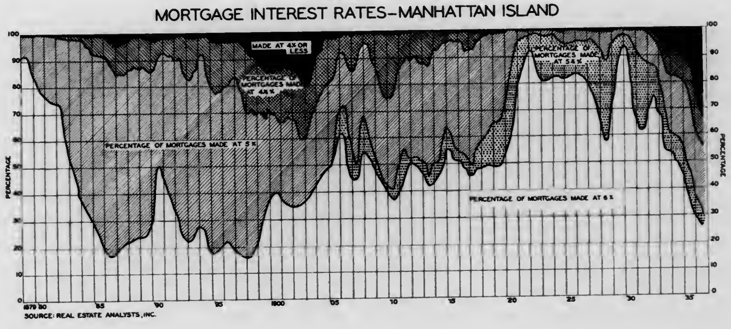
Undoubtedly building costs is one of the important basic considerations in the study of building, but their trend cannot be used to explain major cycles. This phase of the building picture is discussed elsewhere in connection with industrial construction and residential building. It is pointed out that costs, while they are important, are not dominant in the determination of industrial construction volume, for their importance may be offset by the trend of manufacturing earnings. It is believed, however, that the cost of residential construction is one of the basic factors in the trend of residential construction. This does not mean that there is a cyclical trend in building costs which leads volume of activity, but rather that costs set a resistance point in the changing ability of consumers to buy.

There is no satisfactory way to measure national changes in the cost of borrowing funds for building purposes. Real estate financial markets are imperfectly organized at best so that changes in nominal rates do not occur very frequently. There are wide regional and even local differences in the interest rates charged on mortgages of equal security. This is because each mortgage loan is an individualistic item best known by persons who are acquainted with the conditions where the property securing the mortgage is located. Changes in interest costs may be made either by a change in the rate or through the use of discounts and commissions.

Chart 3 shows the interest rates on mortgages on Manhattan Island since 1879. The chart shows a sharp decline since 1930 in the proportion of total mortgages made at interest rates of 5½% or 6%. Rates now being charged are as favorable as they were at any time during the period. The sharp increase in mortgages bearing a 4% rate or less probably reflects the increasing use of purchase money mortgages which accompanies depression periods.

CHART THREE

MORTGAGE INTEREST RATES—MANHATTAN ISLAND



SOURCE: REAL ESTATE ANALYSTS, INC.

These comments do not mean that interest rates are unimportant in explaining the conditions of the building cycle. They do mean, however, that the building cycle cannot be completely explained by variations in interest rates as some have attempted to do. If bond yields are compared with the movements of the three major building cycles, low yields were associated with building recovery in two out of three instances. Also, rising yields accompanied two of the down turns. The case is not clear-cut, however, for at the close of the War building expanded rapidly without a stimulus from low interest rates, and after 1925 private building declined without any apparent connection with interest rates.

In the recovery phase of the present building cycle, interest rates, as measured by bond yields, remained low for quite some time without imparting any stimulation to building activity. Yet in spite of our inability to find a close statistical correlation between the two we can say that interest rate changes are important because they affect not only the cost of the project but also measure the money return that could be obtained elsewhere on capital investment. Custom strongly influences changes in mortgage interest rates.

The usual adjustment to changed conditions in the building industry is through a change in the supply of funds rather than a change in the price of money. When interest rates tighten there is immediate reflection in the type of securities issued. Under favorable money market conditions projects can be financed which would not be undertaken at other times. One of the outstanding features of the money market is a great variation in the availability of funds for mortgage investment.

There is a paucity of good information available on rental rates. Many building owners are reluctant to give periodic information. Even in those instances where information is freely and fully given it is difficult to devise a measure of the changing trends. Buildings are so individualistic that a direct comparison of their rental rates is unsatisfactory. There is an ever-present problem in comparing rates of long term leases and short term. Building operators generally prefer to let a part of their available space remain unoccupied rather than lower rates on all of the rented area. Very frequently changes in rental rates will be reflected in free rent, unusual alterations, or some other method of adjustment that does not appear in the nominal rates.

In spite of the difficulty of interpreting rental information, there is considerable evidence that increasing rents are a vital factor when building turns up from a depressed condition. This is entirely reasonable because such an increase improves the prospect of a profitable return. Also it is an index of the amount that the real estate market is "cleaned up" through a shifting of properties from "weak" to "strong hands". When the building boom once gets under way, however, it frequently expands in the face of falling rents, so that by the time the crest of the boom is past rents are both low and declining.

Total building activity may be divided into two groups:

1) Replacement of old structures, and
2) Building for new population.

If population were static then building would be theoretically limited to depreciation and replacements on account of obsolescence and rising standards of living. Since this tends to be a constant amount year after year, there would be no building cycles under

these conditions unless they were introduced by factors outside of the industry influencing the ability or the desire to make such replacements. It is reasonable to suppose that there is a close connection between population growth and building. It has been shown that there was a minor change only from 12.0 to 11.8 buildings per 100 inhabitants in Chicago when the population grew from that of a mere village to a metropolis. A similar study of Los Angeles has demonstrated that building maintains a rather constant relation to total population.

When we speak of population growth as a basis for building needs it is necessary to amplify our meaning of the term. The need for building does not depend solely on the national growth in population. The building market is a local market. The surplus of space in one locality is not available to relieve a shortage elsewhere. Because of this a regional shift in population or other internal migration may require new building activity. Hence population growth means the sum of all increases in population rather than a net change in the total.

A somewhat more detailed discussion of population and building is made elsewhere in this study in connection with the housing problem. Suffice it to say that replacement demand does not appear to be the motivating force of building cycles.

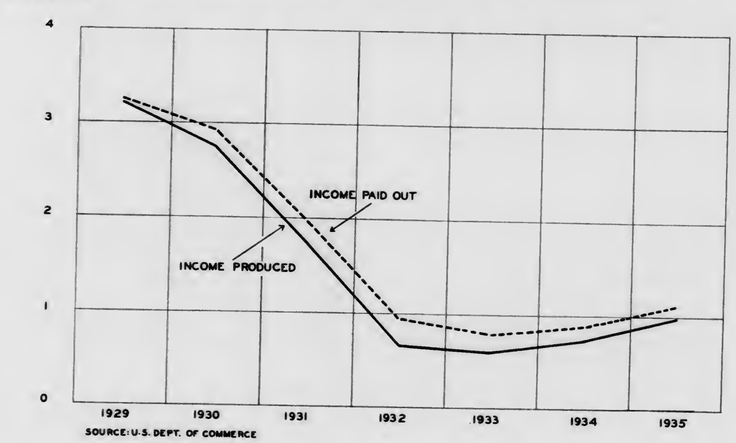
Without hindrance from other factors replacement demand would be evenly distributed. Replacements, like building for population growth, must take place at some time and if even distribution does not take place in accordance with need, it follows that it will be bunched -- thereby adding to the cycle which has been brought about by other factors.

Construction and National Income

Recently the Department of Commerce released detailed information on income of the construction industry which is included in the Department's studies of the total national income from 1929 through 1935. Chart 4 shows the trend of income produced by the construction industry and income paid out throughout these years. In common with the trend in most industries after 1930 construction income paid out exceeded income produced. This means that corporate savings or capital funds were drawn upon to supply the difference.

CHART FOUR

INCOME OF THE CONSTRUCTION INDUSTRY



SOURCE: U.S. DEPT. OF COMMERCE

From a total of $3,257,000,000 in 1929 income paid out declined to a low point of $785,000,000 in 1933. A moderate recovery took place in 1934 and 1935, the total in the latter year increasing to $1,100,000,000. These estimates cover contract construction only.

Income produced or paid out in connection with "force account" construction undertaken by various industries with their own employees is included with the total of the industry for which the work took place. If it were possible to expand the Department's estimate to include "force account" work the importance of construction as a percent of our total national income would be increased materially. The estimate of income produced in 1929 of $3,225,000,000 was based upon a contract construction total of $7,001,000,000.

Total estimated construction in the United States that year, including "force account" work, has been estimated by W. P. A. to have been $10,535,000,000, and by the Engineering News Record to have been $10,377,000,000. If we accept these estimates and assume

that the "force account" work included therein contributed a proportionate amount to national income, then we can say the construction industry in its entirety contributed around $4,800,000,000 to our aggregate national income in 1929.

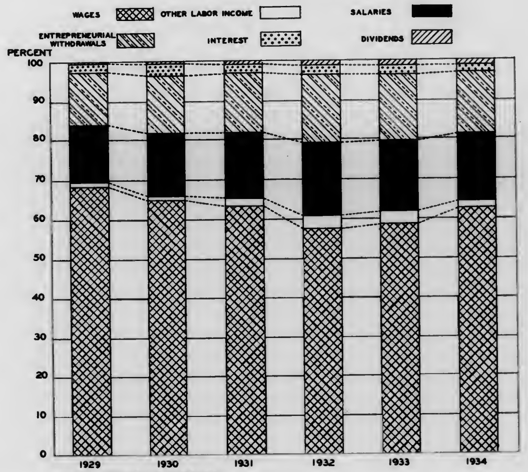
Complete figures of the national income in 1936 are not available, but it has been estimated that the total will be around $61,000,000,000. While the construction industry showed a substantial recovery in 1936, the total volume was only about 54% of 1929. It is apparent that a considerable amount of the gain in national income which we must have to achieve 1929 levels must be provided by the lagging construction industry.

In compiling these estimates the Department has pointed out the extreme difficulty of working up estimates on the building industry. These estimates may be subject, therefore, to a substantial margin of error.

Chart 5 shows the percentage of distribution of construction income paid out by types of payment. In 1929, 68.5% was paid out as wages and 14.5% was paid out in salaries. As the total distribution declined the percentage going to labor also declined to a low point of 57.7 in 1932. The small proportion of the total accounted for by interest and dividend payments reflects the organization of the industry into a large number of individual proprietorship units.

CHART FIVE

DISTRIBUTION OF CONSTRUCTION INCOME PAID OUT



SOURCE: U.S. DEPT. OF COMMERCE

TRENDS IN CONSTRUCTION INDUSTRY

Total Construction

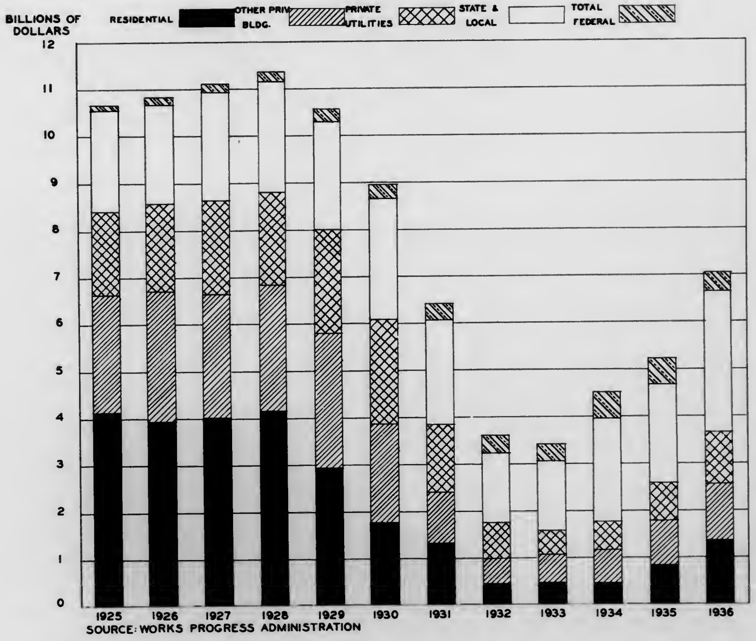
During the War period construction activity was reduced to a minimum, except for activity which had a direct bearing on our participation in the fighting abroad. After the post-war deflation had run its course the construction industry - or rather that division of the industry designated as building - began to step up its operations to make up for the accumulations of the War period.

It is generally believed that the upward trend in construction in 1921 and 1922 provided a pivotal point around which general business recovery started. When this tendency was reinforced by the rapid development of the automobile industry, general activity gradually advanced. After 1925 other factors combined to roll up a boom psychology.

Building activity increased sharply each year until 1925. After 1925 the total of all construction continued to increase, but the gains were not as sharp as they were in the first five years of the cycle. Moreover, divergent trends appeared in various divisions of the total activity. Residential building accounted for a larger proportion of the total in 1925 than it did in any one of the four subsequent years. The grand total of all construction continued to increase to a peak in 1928. The proportion of total construction classified as private utility increased as a percent of the total after 1925 and did not reach a peak until 1930. These trends are shown in Chart 6 and in the Appendix, page i.

CHART SIX

TOTAL CONSTRUCTION



SOURCE: WORKS PROGRESS ADMINISTRATION

Several estimates have been prepared of total construction activity in the United States. Some of these extend back further than 1925, but have not been carried forward to include recent years.. There is considerable difference sometimes in these estimates either as to the grand total of all construction or the amount accounted for by separate divisions.

We have chosen the estimates compiled by the Works Progress Administration because they are recent and because they are broken down in considerable detail. For the most part the variations in these estimates and others is due to a difference in the method of computing and to the inclusiveness of the data used. For example, there are apparently some expenditures included that might better be classified as maintenance - yet this data serves as a satisfactory means of depicting trends throughout this twelve year period.

These figures show the catastrophic decline in building during the deflation years and the modest extent of the recovery since the low point in 1933. If we assume that the years 1925-1928 were average years, then the construction industry cannot be said to have fully recovered until volume approaches the following levels:

	Construction 1925-1928		Estimated 1936 Construction		
	Yearly* Average	% of Total	*	% of Total	% 1925-28 Average
Residential	$4,090	37.2	$1,355	19.2	33.1
Non-residential	2,343	21.3	625	8.8	26.7
Alterations & Repairs	281	2.6	555	7.9	197.5
Total Private	6,714	61.1	2,535	36.0	38.6
Private Utilities	1,893	17.2	1,160	16.5	61.3
State & Local Public Works	2,209	20.1	2,956	41.9	133.8
Federal	167	1.5	394	5.6	235.9
Grand Total	10,983		7,045	100.0	61.1

* In millions

According to this estimate the entire volume of construction in 1936 was only 61.1% of normal even though governmental expenditures exceeded by a substantial margin the average for the four years prior to 1929. Non-residential and residential construction continued to be the most depressed divisions of the industry.

In normal years the building supply companies sell more products to these divisions of the industry than to any other. Total private construction (excluding private utilities) was only 36% of normal last year. This appears to indicate that the building supply companies can expect further sharp increases in volume of sales when and if total activity reaches the pattern suggested by the average construction period of 1925-1928.

It is estimated that each dollar expended on construction creates a general purchasing power of $2 or $3*. Total volume of construction declined about $8,000,000,000 from its high point in 1928 to its low in 1933. This primary reduction in purchasing power probably caused an additional secondary decline of $16,000,000,000.

Contract Construction

We have previously pointed out that the difference between the estimated total of all construction activity shown in Chart 6 and the reported figures of F. W. Dodge Corporation of contracts awarded is due generally to the fact that the former includes all estimated "force account" work.

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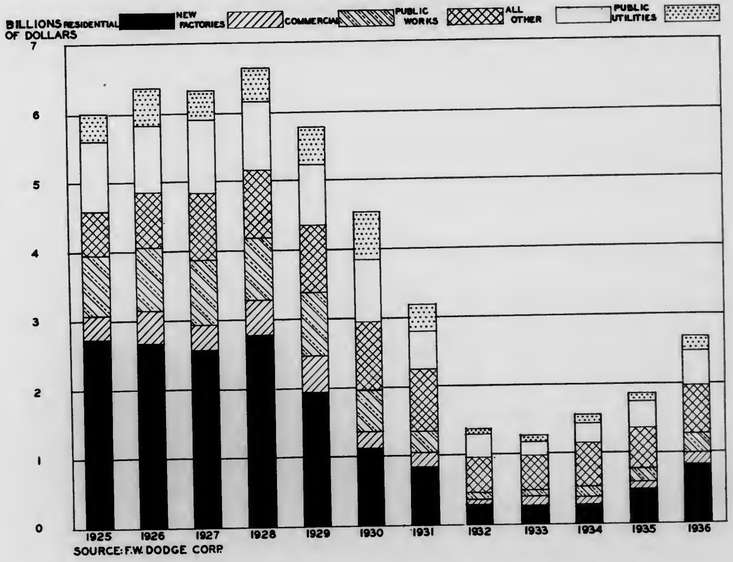
* Estimated by Lowell J. Chawner, Chief, Construction Economics Section of the U. S. Bureau Foreign and Domestic Commerce.

The Department of Commerce in its census of construction defines the construction industry as being contract construction. Since the Dodge figures include contract work their reports can be taken to be representative of the construction industry. Chart 7 and page iii of the Appendix give the Dodge figures for annual contracts awarded since 1925. It will be noticed that these figures are materially less than the estimates given above of the Works Progress Administration. The differences are chiefly due to the following:

CHART SEVEN

CONSTRUCTION CONTRACTS



SOURCE: F.W. DODGE CORP.

1) The Dodge figures do not cover the states west of the Rocky Mountains. It was formerly believed that construction in these states was around 10% to 12% of total contract construction as reported for the 37 states east of the Rocky Mountains. This is not a constant percent, however, for in recent years building has recovered more rapidly in the Pacific Coast area than it has in the East.

2) Until recently the Dodge figures omitted new construction and alteration projects under a certain minimum value. This minimum value was $5,000 through 1927, $2,000 after 1930, and $1,000 after 1932. Since 1933 projects of even smaller value have been included in special cases. It is believed, however, that these changes have not seriously affected comparability.

3) Since 1930 construction figures for pipe lines have been segregated. Prior to that time they were included but were not reported separately.

4) No adequate statistics on the total volume of rural building are available.

5) Because all "force account" work is not included in the governmental, railroad and public utility fields, the Dodge figures underestimate the total volume of road-building and other civil engineering work.

Public and Private Construction

Public and private construction during the decade following the World War have followed dissimilar trends. Both categories had a steeply rising trend until the depression started in 1929. Over short periods of time expenditures for private construction show a closer correspondence to cyclical fluctuation of general business than public expenditures do. Public works are financed by governmental agencies and are not undertaken for profit; hence they are less sensitive to business cycles. Also, the period of planning prior to the beginning of actual construction is generally longer.

After 1929 private construction fell off rapidly. Public works declined less sharply, so that there was a significant shift in the distribution of all construction classified as public and private. This is brought out by the following estimates:

Private Construction - % of Total

Year	Engineering News Record	Works Progress Administration	F. W. Dodge Corporation
1925	69.7	78.7	
1926	69.9	79.4	
1927	68.0	78.3	
1928	67.1	77.4	
1929	68.5	75.9	
1930	58.3	68.3	
1931	47.8	60.2	
1932	32.4	48.4	43.2
1933	37.2	46.3	45.6
1934	23.6	39.5	36.8
1935	33.2	49.4	45.4
1936	43.8	51.5	50.3
1937 (est)			61.7

The Engineering News Record has not reported a detailed break-down of its estimates of total construction activity in the United States. The estimated total agrees reasonably well with the Works Progress Administration estimate for the years 1928 and 1929, but in prior years the Engineering News Record estimate was somewhat smaller. The Works Progress Administration percentage includes private building and private utilities. Figures from the F. W. Dodge Corporation are not available prior to 1932, but an approximation of Dodge figures can be made from the sub-totals reported in the Appendix.

It is believed that 75% to 80% of the total would be a fair estimate of private work in the years 1925 to 1929. These estimates clearly show that the proportion of private construction declined during the depression years to one-third or one-half of its normal amount.

As we follow the activity of the building industry, its progress toward normal levels can be measured not only by its volume trends, but also by the proportion of the total accounted for by private endeavor. In that respect the year 1937 is encouraging for the advance estimate of the F. W. Dodge Corporation indicates that private activity will account for a considerably larger part of the total than during any year since 1930.

Building Costs

Almost any article that enters into every day commerce has a cost determinable almost to a penny. The cost systems in most industries are accurate because they deal in constant units. This does not hold true of construction. Building production or reproduction costs cannot be determined closely -- at best they are guesses.

Two buildings are seldom alike or produced under identical or even similar conditions. The control of the industry is not centered in mass production units where each concern can keep accurate records of a large number of operations. There has been, therefore, no fundamental basis upon which to erect accurate data. Hence there have been no basic costs. Cost data consists of prices set more or less arbitrarily for each contract in a project. These contracts are based upon estimates of costs made in advance. They represent each contractor's allowance for the expected cash expenditure for building materials and labor, overhead and a safety factor to allow for a variation in the quality of materials, lost time due to inability to get materials and labor on time, labor disputes over jurisdiction, etc., and mistakes in figuring. This advance estimate of costs is further adjusted up or down by the contractor's desire for profit, the bargaining power of the one letting the contract, and guesses as to what competitive contractors might bid on the job.

There is shown in chart 8 data on construction costs of the three leading indexes. In view of this discussion of the unreliability of construction cost accounting, these indexes must be used with great caution. In fact it has been stated -- "Cost data based on past records are among the most deceptive statistical materials ever to be put to general use." *

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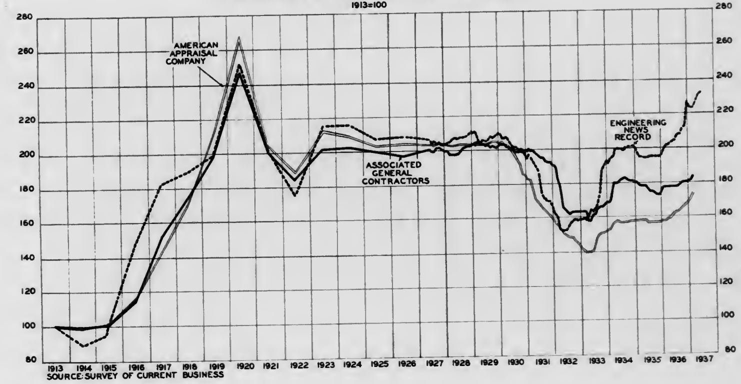
* The Architectural Forum.

CHART EIGHT

CONSTRUCTION COST INDEXES

1913=100



SOURCE: SURVEY OF CURRENT BUSINESS

The dissimilarity in movement in these indexes is due to variation in methods of weighting. The Engineering News-Record index, for example, is based upon prices of steel, cement, lumber and labor -- so weighted that they reflect the trend of construction costs in the heavy field more than in any other. The Associated General Contractors index gives a 40% weight to labor and 60% to building materials. The American Appraisal Company index is weighted with cost percentages taken from buildings of each type actually constructed. These indexes show little more than a trend in certain groups of items over a period of time.

The census of construction for 1935 showed that 42% of the total value of work performed (not contracts let) went to material; 32.8% to direct labor payroll; and 25.2% to overhead expenses and profit or loss. The three indexes charted above do not take into consideration overhead items and profit, which account for about one-quarter of the total. They use only a few materials and the system of weighting according to fixed amounts cannot be representative of changing practices. Furthermore, if published or quoted rates are used during unfavorable periods, such quoted prices are not indicative of actual prices paid.

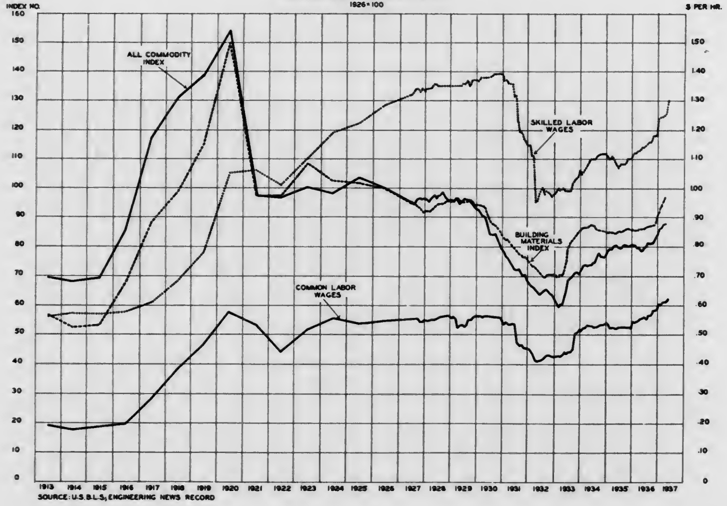
There are widespread local variations in costs of erecting buildings. Any index based upon local averages is a hypothetical one. Not only is there this regional differential but there is also considerable variation within a region itself. There is almost as much variation in construction costs within a metropolitan region as there is between regions themselves. In part this is accounted for by differences in wage scales. Other factors are local building codes, transportation costs, differences in quality standards and productivity of labor. For these reasons indexes based on averages do not accurately show variations in actual costs. They must be used with considerable caution as indicators of costs at a specific time.

A better indicator of the trend of building costs can be had by following price trends of individual commodities and hourly labor rates. This makes possible the weighting of the various factors entering into a particular structure as they are found to be in actual practice. A comparison of the trend of building material prices and hourly rates of pay for all of the building trades with the trend of general commodity prices is given in chart 9.

CHART NINE

BUILDING COSTS

1926=100



SOURCE: U.S.B.L.S.; ENGINEERING NEWS RECORD

This chart seems to show that construction costs are out of line with the general average for all commodities and that labor costs are more out of line than building material prices. There is no more vital question with which the construction industry has to grapple than that of bringing down the average of its total cost to a point where the building cycle now under way will not be hampered by exhaustion of numbers of people able to buy its wares. There is, however, no agreement on methods of achieving this desired end.

Even this chart does not fully reveal the extent of the increase in building costs which took place during the last year. While both material and labor costs showed steady increases last year the sharpest advance took place in the closing months of the year.

The line showing hourly labor rates does not take into account sub-union wage scales and other forms of price cutting which have been so important up to the present in the low prices prevailing in the housing market. In other words, the increase in building labor costs during the last fifteen months has been more than the lines of the chart show; for to the posted wage rates has been added a tendency for actual wages paid to approximate more closely the published rates. Similar observations can be made for building material prices.

List prices increased sharply at the end of the year. To this increase must be added the general reestablishment of list prices by manufacturers who for several years have sold their goods at any price they could get.

Summary

A reasonable estimate is that actual costs of building at the beginning of this year were from 10% to 15% ahead of actual costs a year ago. A further increase is inevitable this year. It is not likely that the manufacturers of building supplies will be able to avoid entirely those factors which are generally encouraging higher prices of finished goods. Building labor is fully aware of its strategic position.

It is probable that actual building costs at the end of this year will show an increase of not less than 15% over December 1936. Building materials prices have already advanced sharply. It is believed, however, that further increases during the remainder of the year will be less sharp than in the first four months. Labor costs will continue to advance.

Rising construction costs of these proportions are a major factor preventing a runaway building market.

Private Debts and Building

In most cases the purchase of a home represents the largest single expenditure made in the life of the average family. The outlook for the building industry, therefore, cannot be disassociated from public and private debt factors. An examination of the long term real estate debt structure and the total debt burden in the United States should permit us to deduce some basic conclusions on the present building cycle by examining the trend of long term debt creation during the last building cycle and the present level of urban debts, from which we embark on a new cycle.

The income of a home buyer and the confidence he feels in its permanence are vitally important. The trend of national income affects building operations directly through the income of individual home builders and indirectly through such factors as rentals, interest rates, prices and conditions in the mortgage market.

Not only is the trend of national income a most important factor in the trend of building, but the trend of building is one of the important factors in the trend of national income. This relationship cannot be reduced easily to mathematical correlation. This is largely due to the fact that building is mostly financed by long term mortgages. We have, therefore, a direct relationship between the trend of national income and the amount of the down payments that home builders make when they buy or build. The remaining part of the cost - generally amounting to two-thirds or three-fourths of the total - is related to the national income indirectly insofar as the level of the national income determines the supply of mortgage funds available, their interest rates, and the borrower's confidence in the future.

According to a study made by the Department of Commerce, the volume of long term private debts in the United States increased 65% from 1922 to 1930. During the same period state and local public debt was increasing at a faster rate than the Federal debt was declining, so that there was a net increase of slightly more than 5% in the total public debt. This huge increase in our private debt was followed by a decline from $84,500,000,000 in 1930 to $73,500,000,000 in 1935, or about 13%. The major part of this reduction came from enforced reduction of urban real estate debts contracted in the boom period of the twenties. The Department's estimates show a phenomenal increase in our long term private debts after 1912:

Private Long-Term Debts, 1912-35 (End of Year)
(Dollar figures in Billions)

	1912	1922	1930	1934	*1935
Railway	$10.7	$11.9	$13.4	$13.4	$13.3
% of total	34.2	23.2	15.8	17.9	18.1
Public Utility	5.3	8.4	14.0	14.8	14.8
% of total	16.9	16.4	16.6	19.8	20.1
Industrial	4.5	6.8	10.8	8.5	8.1
% of total	14.4	13.3	12.8	11.3	11.0
Farm mortgage	3.8	8.9	9.1	7.8	7.8
% of total	12.1	17.4	10.8	10.4	10.6
Nonfarm Home Mtg.		)	22.3	17.7	17.1
% of total		)	26.4	23.6	23.3
	7.0	15.2)			
Other urban	22.4	29.7)			
real estate debt		)	14.9	12.7	12.4
% of total		)	17.6	17.0	16.9
Total	$31.3	$51.2	$84.5	$74.9	$73.5

* Preliminary

In 1912 home mortgage and other real estate debt comprised about 22.4% of the estimated total of private debt. This increased to around 40% at the end of 1935. From 1922 to 1930 real estate debt increased about $22,000,000,000, or 138%. It is interesting to note that the increase of debt in this one classification was about two-thirds of the total increase in the private debt structure between 1922 and 1930, as estimated by the Department. This huge increase reflects a great amount of speculative building which accompanied the up-side of the building cycle in the twenties. This was unsoundly financed. It is important to keep this fact in mind as we try to appraise the outlook for the building supply companies in the current cycle.

Net urban debt was reduced about $7,700,000,000 in the five years after 1930. This represents a reduction of about 21%, which compares with an estimated reduction of 25% for industrial long term debt, and 14% for farm mortgage debt. These percentages stand out in sharp contrast to railroads and public utilities. Railroad debt remained practically unchanged during the period, while public utility debt increased. During this same period the estimated annual interest requirements on urban real estate debt declined from $2,391,000,000 to $1,921,000,000.

This reduction in mortgage debt appears to be moderate when it is compared with the preceding rise. This is probably accounted for by the fact that real estate values declined so sharply that foreclosures did not correspond to the number of mortgages in actual distress and to the activities of the Home Owners Loan Corporation in saving around 1,000,000 homes from being thrown onto the real estate market.

The 13% decline in private debts from 1930 through 1935 was more than offset by an increase in the Federal debt. This is shown by the following table which gives a comparison of the growth of public and private long term debts since 1912:

Public & Private Long Term Debts
(In Billions)

	1912	1922	1930	1934	1935
Total private debt	$31.3	$51.2	$84.5	$74.9	$73.5
Federal debt	1.2	24.0	16.2	27.1	28.7
State & local	4.5	8.5	18.0	18.9	19.3
	$37.0	$83.7	$118.7	$120.9	$121.5

It will be noted that our combined debt burden increased about 42% during a period that is now pointed to as having laid the background for the depression. At the beginning of 1936 the combined total of public and private long term debts exceeded the previously reported peak in 1930.

If we assume that urban mortgage debt will increase as much during the current building cycle as it did in its last upswing in order to show a cycle of comparable magnitude, then mortgage debt over the next ten years will have to show an increase from present totals of 60% to 65%. We doubt that any such thing can occur because we are starting this cycle from a level that is almost 100% higher than the urban mortgage level from which we started the 1920 cycle. Furthermore, unlike that period, increases in the private debt structure are not being partially offset by repayment of the national debt. On the contrary the growth in our national debt has more than offset deflationary write-offs of the private debt burden.

Of the total urban mortgages outstanding at the close of 1934 it

is estimated that $17,700,000,000 were mortgages on city home properties. Holders of these mortgages were as follows:

Agency Holding Mortgage	Amount
Building & Loan Associations	$4,100,000,000
Banks	3,700,000,000
Home Owners Loan Corporation	2,200,000,000
Life Insurance Companies	1,500,000,000
Mortgage Companies	1,090,000,000
Title & Trust Companies	500,000,000
Construction Companies	80,000,000
Individuals	3,800,000,000
All other	770,000,000
Total	$17,740,000,000

Source: Federal Home Loan Bank Review.

The extent of the distress in the urban home mortgage field is shown by the fact that the Home Owners Loan Corporation had closed loans from the date of its opening in the summer of 1933 to the end of 1934 which totalled $2,200,000,000. This grew to a total of about $3,000,000,000 before the Home Owners Loan Corporation ceased to make new advances. In previous depressions foreclosed property and mortgages were in "strong hands" at the end of the crisis. Building could go forward in confidence that the real estate market had been "cleaned up". This is not the case as we enter the fourth year of this building cycle.

Of the 1,000,000 homes saved by the Home Owners Loan Corporation from being thrown onto the real estate market, 20% to 24% have been delinquent since the corporation began business. While there has been some improvement recently there has not been enough to eliminate the probability that the Home Owners Loan Corporation will have many properties available for sale.

At the beginning of the year 1936 the Home Owners Loan Corporation had real estate holdings valued at $6,848,000. This had increased to $166,462,000 at the end of the year. There was an average increase of over $28,000,000 a month during the last quarter. In testimony given before the House Committee On Appropriations, officers of the Home Owners Loan Corporation reported that as of November 30, 1936, 62,621 foreclosures had been authorized involving loans of $248,688,000. At the same time the value of the property reduced to possession by appropriate judicial proceedings and held for sale by the Corporation amounted to only $137,000,000." This indicates a lag between foreclosure authorizations and the actual possession of the property.

It is estimated that by June 30, 1937 foreclosure authorizations of the Home Owners Loan Corporation will be 106,000; and by June 30, 1938, 160,000, involving property with a book value of about $600,000,000.

So long as the Government holds so much residential property for sale it cannot avoid being a depressing factor in the home real estate market. The great mortgage lending institutions also have vast amounts of foreclosed property on their hands which they are eager to sell.

A recent survey conducted for the American Bankers Association has shown that the property which is hardest to move consists largely of valuable home property in once fashionable districts which is too large to attract the small buyer, even at a low price; or property value which has been lost by shifts in population. Much of the property held by the Home Owners Loan Corporation and the lending institutions is this type. While there is a rising demand for mortgage loans on residential property of the most up-to-date type, activity is discouraged in other types of real estate.

Summary

The present trends of our national income favor an expansion of private debts which make possible improving building activity. Our position in this respect, however, is not as favorable as it was at the similar point of the last cycle. Our total private debts are about 44% higher than they were then and our real estate debt is about 100% higher. Furthermore, our public debt burden and governmental expenditures are now absorbing a much higher proportion of our national income.

If we assume that a debt expansion comparable to the twenties is necessary to achieve the amount of building of that period then these factors strongly suggest that our present cycle certainly will not exceed and doubtless will do well to come up to the level of the last one.

Furthermore, we reached the volume of the last cycle only by selling people more houses than they could afford and we have not yet cleaned up the real estate market situation which followed when these people could not meet their payments. To re-attain that volume we will have to have a comparable increase in our debt level starting from a higher base without, it is hoped, the temporary aid of unsound financing".

Employment

We have previously discussed the statistical difficulties in dealing with the building industry which come from grouping disorganized sub-groups assumed to be representative of the entire field of construction. Even a discussion of employment based upon census figures is not an exception to an ever present margin of error when commenting upon available data. The most reliable data we have on the total amount of employment in construction is provided by the 1930 census of occupations. Even this data must be adjusted to allow for sub-classifications which include persons not directly engaged in building work and changes in census classification from one enumeration date to another.

Using the census figures as a basis and estimating the numbers in some occupations where not all of the workers reported could be considered directly as a part of the building industry, Mr. A. F. Bemis arrived at the following employment totals:

Number of Workers in the Building Industry in the United States

	1930	%
Employees		
Brick and stone-masons, & tile-layers	170,903	6.6
Carpenters	929,426	35.8
Electricians (1/3 of total)	93,439	3.6
Painters	430,105	16.6
Paperhangers	28,328	1.1
Plasterers & cement finishers	85,480	3.3
Plumbers & gas-fitters	237,814	9.2
Roofers and slaters	23,636	0.9
Stone-cutters	22,888	0.9
Structural iron-workers	28,966	1.1
Tinsmiths & coppersmiths	83,427	3.2
Laborers & helpers	419,802	16.2
Operators, not otherwise specified	18,442	0.7
Apprentices	22,140	0.8
	2,594,796	100.0

These estimates do not include builders and contractors, which numbered 168,000. There is no way to calculate accurately the number of employees in other industries depending upon building operations for their work. This group would include employment in road making and repairs, the lumber industry, the building supply companies, quarrying, real estate agents, etc. The "Iron Age" has reported that 16½% of finished steel output in 1928 and 1929 was consumed by the building industry. Construction is one of the major sources of railroad freight movement.

The commonly accepted estimate is that employment of 5,000,000 persons in years of normal activity depends upon activity in the building industry proper.

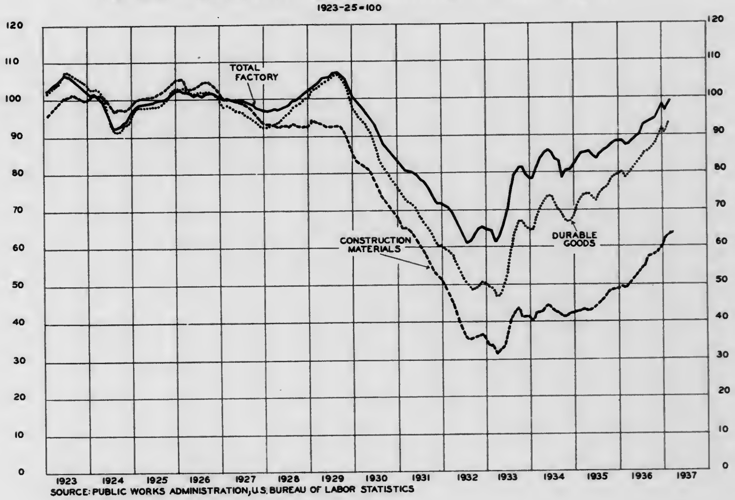
The ratio of skilled workers in the building industry to total population has remained rather constant over a long period of time. Manufacturing industries have shown a sharp increase and agriculture has reported a considerable decline. While the ratio of skilled building workers has not changed much there has been a considerable change in the percentage distribution of this total among the various groups as classified on the preceding page.

Chart 10 gives the trend of employment in the production of six major construction materials (structural steel, cast iron pipe, cement, mill work, steam fittings; and brick, tile and terra cotta). In the three years following the peak period of 1925 and 1926 the index shows a moderate decline. When the general index of factory employment was increasing sharply in 1928 and 1929 the building index showed little change. The total volume of construction in the U. S. did not reach its peak volume until 1928. This indicates that employment in the manufacture of building materials follows the trend of residential construction much more closely than it follows the trend of total construction. As we have already noted, residential building reached a peak for the post-war period in 1925 and 1926. General factory employment has recovered much faster since the low point in 1933 than has employment in the production of building goods.

CHART TEN

FACTORY AND CONSTRUCTION MATERIALS EMPLOYMENT

1923-25=100



SOURCE: PUBLIC WORKS ADMINISTRATION, U.S. BUREAU OF LABOR STATISTICS

Employment in the Department of Labor's general index of durable goods followed the construction materials index fairly closely in the twenties, except for the last two years. In the period of deflation that followed, the decline in the building index was even more severe than the decline in the general durable goods index and on the subsequent recovery it has lagged markedly. The general index as used here by the Department includes the groups that the Public Works Administration have reported separately as construction materials. If it were possible to take all construction activity out of the durable goods group index, the recovery in employment of durable goods, except building, would be made more pronounced and the lag in construction would be even more apparent.

It is well known that employment in the construction industry has a sharp seasonal fluctuation. Until recently the amounts of these fluctuations were based upon localized data covering a small number of establishments. The construction census of 1935 has given us information on this point covering a very large number of establishments. The seasonal fluctuation varies somewhat according to the type of employee and contracting establishment, but in general the low point of employment is in February and the high point is in August. If we take the average number of man hours per month as a base, hours worked in February are about 58% of the average and in August they are about 131%.

The Prospective Labor Shortage

There have been scattered but persistent reports of a shortage of skilled building mechanics during the last six months. At first not much attention was paid or importance attached to these reports - partly because they were inconsistent with the continuation of unemployment relief at record levels. The building labor market is a local market. More than that, it is a local market for specialized crafts of which there may be as many as thirty on a single construction job. Since most of these local markets have not yet reported shortages, it is difficult for many in these unaffected places to attach much importance to these reports of difficulty in other areas. Undoubtedly, the situation at the present moment is not serious, but construction volume is rising. The threat of a labor shortage should be explored as thoroughly as meager statistics will allow.

Shortage reports are increasing in number. Already a controversy over the question is being carried on between employers and labor in newspapers and magazines. The number of areas reporting shortages continue to mount and all of the intangible signs point to the possibility of an insufficient labor supply. Perhaps the most direct proof that can be given to support the contention that a labor shortage is developing is to enumerate specific examples. Last October "Electrical Contracting" reported a definite shortage of skilled electricians. This conclusion was based upon a study of the labor situation in thirty-six cities. At the same time the International Brotherhood of Electrical Workers reported that "...there is not even an impending shortage of union wiremen nationally". A shortage was reported in Missouri by the Engineering News Record.

A Kentucky report stated "...a recent survey in this State reveals that in every community building tradesmen are all employed and there is an acute shortage." Local difficulties were reported in Washington, Baltimore, Birmingham, Los Angeles, Syracuse, etc. The "Associated General Contractors" reported that in one instance a bricklayer of eighty-one years of age was pressed into service. The shortage reports related more often to the bricklayer and the carpenter than to any other craft groups.

Indirect evidence of a shortage can be derived from current information on the trend of wage rates. The Engineering News Record reports that common labor rates on May 1st made another new all-time high. At the same time skilled labor hourly rates have climbed back to about 93% of the all-time top rates reported in 1930. In some areas there is a tendency for non-union rates to overtake union rates. Over the past year the tendency has been for common labor wages to rise faster than skilled labor wages. This is normal because union skilled labor rates are set by contract and hold for specified periods of time. As these contracts come up for renewal this year, it is noteworthy that in nearly every instance new agreements have been drawn establishing higher rates. We can confidently predict that labor costs will continue to rise.

Those who accept these examples as indicating a current or imminent shortage of labor explain that it has come about for the following reasons:

1) There has been very little training of apprentices since the deflation in building got under way. The nation-wide apprentice enrollment in the major building trades as recorded by the vocational training division of the U. S. Office of Education was 6,366 in 1935 - in a group of crafts that had estimated employment of 750,000 in 1929.

2) Death has taken many who helped provide the man-power for the last building boom. Old age and disability have removed many more from the labor market. This has probably decreased the supply by four or five per cent per year. Forty per cent of the skilled building mechanics are 45 years old or more.

3) There has been a widespread shift of building mechanics into other lines. This diffusion has carried them into many industries, chiefly into the marketing division of the oil industry.

If construction remained at the low level of 1932 and 1933 these factors alone would not yet bring about a labor shortage. It is only when they are viewed in the background of rising construction volume and the good prospects for continuation of this volume that they combine to make a serious problem.

There has been considerable controversy between some employer associations and the Works Progress Administrator, Harry Hopkins, over the question of whether the maintenance of work relief rolls has contributed to the shortage. Many contractors vigorously assert that their operations have been handicapped by work relief operations. Mr. Hopkins claims that there are few eligibles on the relief rolls because most building mechanics in the Works Progress Administration would be considered too old by private employers.

In this controversy over the adequacy of labor supply it can be stated in a general way that employers and contractors assure us that a shortage either is here or is imminent. Union spokesmen for labor assure us that labor supply is adequate to take care of the present building cycle. There are exceptions to this line-up in the debate, but this is a satisfactory general statement.

The unions vigorously deny that there are any shortages at present. As for a future shortage, they reiterate that they are willing to train apprentices for such a long term possibility. They do not consider, however, that the question requires immediate action. To support their contention unions point to the American Federation of Labor figures on the proportion of trade union men employed in the building industry. In December of last year the American Federation of Labor reported that about 22 per cent of trade union membership was unemployed. When this data is examined critically, however, it does not provide much assurance that building will not feel the pinch of a labor shortage as the cycle proceeds towards higher levels.

The union argument against a present shortage is more convincing when it says the examples of shortages reported in localized areas in recent months are "artificial". Some contractors report a shortage merely because employees refuse to work for them because the labor scale is below standard or because of a reputation of being unfair. Such employers will always report a shortage.

Again it is easy for a contractor to over-generalize on a small experience. The building industry is so localized and broken up into crafts that it would be surprising in putting together the work of all of these groups into the building process, if employers should not now and then even under favorable conditions have difficulty in getting the right kind and amount of labor at the time needed in each building operation. If for any reason difficulty appears in getting one of the main crafts at the right time, it would be relatively easy to magnify such lack of coordination into a general shortage.

There is another way in which it is easy to over-emphasize a local shortage in a national building market. The national building industry is merely an aggregate of local industries. If a corporation decides to erect a new building in a small place or if the government lets a contract for a public works project a surplus of labor in the local area may quickly become a shortage requiring the importation of mechanics from other areas. This requires time and in the meantime the shortage report has been widely circulated.

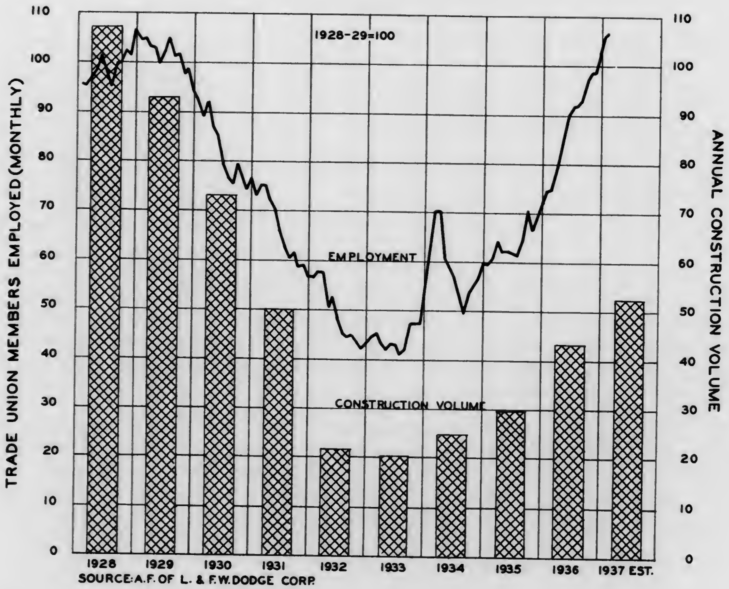
Labor unions are not doing very much on the apprenticeship question. Having undergone several years of famine it is only natural that they want to assure a good market for their services in the current cycle. The Federal Committee on Apprentice Training created by Executive Order of the President in June 1934 is doing notable work on this question. Some building supply companies have started training young men in the building crafts. Unions appear to be somewhat reluctantly falling in line. If we are approaching a shortage it is rather difficult to see how the combined efforts of these groups, assuming that the unions cooperate fully, can train enough men for the next three or four years if the present rate of building improvement continues. An apprentice program requires three years or more to bring results. Until recently unions steadfastly maintained that a shortage, if and when it developed, could be relieved by bringing back to the building trades those who shifted to other occupations. Now they are accepting the view that even if they do return much of their skill is permanently gone.

It is to be regretted that information on the labor situation is both meager and difficult to interpret. One of the few sources of information on the subject is the monthly report of the American Federation of Labor, giving the per cent of trade union employment in the building trades. This information does not go back earlier than 1928. During 1928 and 1929, years in which total construction activity was high and generally at peak levels, except in the residential field, the Federation reported that on the average 74% of its members were employed. It seems logical to believe that an employment level, only three-quarters of the theoretical full time employment, was not due to a great amount of unemployment because of a lag in construction activity. Rather it seems to point to other factors, such as the wide seasonal fluctuation which would probably make the attainment of full employment impossible under any conditions, immobility of labor between local areas, time between jobs, and delays due to mistakes of coordination in the building process.

If we reduce these reports of the American Federation of Labor showing the per cent of its members employed to an index number, using these so-called good years of construction as a base, it does appear to point a direction in the current controversy. A comparison of such an index with the total volume of contract construction as reported by the F. W. Dodge Corporation is made in chart 11.

CHART ELEVEN

EMPLOYMENT AND CONSTRUCTION VOLUME



SOURCE: A.F. OF L. & F.W. DODGE CORP.

The index showing trade union members employed is not an index based upon the total number of workers engaged in construction work during each month. No one knows what the number actually is. Rather the index compares the proportion of American Federation of Labor trade union members employed in any given month with the proportion reported as employed in 1928 and 1929.

These figures indicate that about the same proportion of trade union members are employed now as were employed in those years of good construction volume. This alone would not be so serious if the total number of workers available had been maintained, but we know that that has not been the case. If the American Federation of Labor reports are fair samples of conditions in the industry then it appears that the labor needs of a rising construction volume have been met by putting back to work since 1933 an increasing proportion of the smaller supply available.

Again, as in so many instances in this report, it is necessary to

warn against too literal an interpretation of the data presented in this chart. It is quite probable that the Federation reports were not representative during the low depression years because a portion of the unemployed dropped their membership and hence were not reported. If this data was the only evidence we had of the possibilities of a labor shortage then we would be reluctant to make such a statement; but the data in this chart merely reduces to a visual basis the widespread local reports of supply difficulties.

As local reports of shortages are piled one upon the other support and amplification is given to this data and to the foreboding prophecies of those who wonder where the labor supply is coming from to bring the "boom" up the level of construction that was thought to be normal in pre-depression years. There is considerable reason to pause when we reflect that the proportion of union members employed is now as high as it was during those good years. The estimated construction volume for 1937 is only about 53% of average volume for the last two years before the big deflation in the building industry got under way.

One of the most careful attempts that has been made to evaluate the opposing viewpoints of this controversy was made by the Architectural Forum. The Forum examined the labor market in 1928 and found that supply and demand that year were in satisfactory balance. It estimated that the supply of skilled building mechanics declined 4% in each subsequent year due to death, old age and occupational shifts. With construction volume rising and with very little apprenticeship training being done to offset the 4% yearly decline, the Forum concluded that "...a shortage will be evident in the late summer and early fall of 1937..."

The opposing points of view in this labor question are clearly brought out by the following quotations from sources interested in this question. Some of these comments were reported by the Architectural Forum. Others were obtained by a field check by Young Management Corporation:

> Harry C. Bates, President, Bricklayers, Masons and Plasterers International Union of America:
>
> "There is no shortage of labor as far as the members of our organization are concerned. The propaganda that has appeared in reference to a shortage is malicious..." "It is the custom of our organization that there should be one apprentice to each ten mechanics in the industry. This organization is ready to cooperate in seeing that apprentices are inducted into the industry..." "Neither the PWA nor WPA has caused

any shortage of labor in the field of contract work. The WPA projects employed a preponderance of unskilled labor and a great majority of the mechanics employed on these projects are men over the age of 45 or 50 who, normally, find it had to secure employment on outside contract work."

An Officer of a Union in One of the Leading Industrial Areas states:

"Skilled labor supply in this area probably could lift building to 85% of the 1928-29 level. In the entire area there is an oversupply above 1929 in the painters and carpenters trades - as a four-year apprenticeship is not required for these men. Since the average age of bricklayers hereabouts is 50 years, we cannot produce work in the volume of the earlier period. Under our apprenticeship laws it will be 1941 before we have any new men available. This condition applies to the whole of the United States and Canada. As for the training of additional men, I cannot speak for trades other than bricklayers and plasterers. We are absolutely opposed to outside advice or suggestions regarding the addition of apprentices. We have always handled our own apprenticeships."

C. Holmes Rapp, of Charles T. Wills, Inc., Builders:

"There is a labor shortage of skilled workers in masonry work. This is particularly apparent in western Massachusetts, where we are at present working."

"We have very few apprentices, the fraction being less than one per cent. There is no doubt but PWA and WPA projects do interfere with the amount of labor."

B. B. Cattle, Secretary, Copper and Brass Research Association:

"The United States today is on the threshold of one of the greatest building booms in its history, which should extend over a period of five or six years. I am very fearful that its growth may be retarded to some extent by the fact that there exists a shortage of skilled mechanics in the building industry. This not only includes sheet metal workers and plumbers, but also includes bricklayers, masons and plasterers."

A. D. Thiebald, Assistant Vice President, U. S. Building and Loan League:

"Probably in the majority of cities and with the present

volume of building the present labor supply is adequate. In some cities which have had a bit more than average increase in volume of construction we have had reports of shortages of skilled labor - particularly bricklayers, plumbers and electricians. Such reports have come from Denver, Portland, and Los Angeles, somewhat more decisively than from other cities. These reports indicate that shortages of labor have not only delayed completion of buildings in some cases but are resulting in progressively increasing wage scales.......I doubt whether skilled building materials labor is adequate to take care of the expansion in building volume which can be anticipated over the next few years. I am also doubtful whether mechanics can be trained rapidly enough to permit an adequate supply. The result is likely to be not only continuously higher wage scales but actual obstruction to some building.......these factors will act somewhat as a brake on new construction - and when combined with rising costs are acting as the most important single factor in holding back the volume of new construction."

J. W. Williams, President, Building and Construction Trades Department, American Federation of Labor:

"...While there is some agitation going on by which they are endeavoring to show a shortage of laborers and building mechanics throughout the United States. So far this is not true. We have been able to furnish all of the men necessary and still have some left over. It is my opinion that we will be able to furnish the men even though expansion of the building industry does increase to any great extent.

"In reference to the training of men for work, our apprentice system throughout the building industry will take care of that..."

E. M. Craig, Executive Secretary of National Association of Building Trades Employers

> "We can expect to see a drastic shortage of building labor if there is a decided expansion of construction....I doubt very much if sufficient skilled mechanics can be developed to offset a labor shortage...this training period will have to be shortened to at least two years."

Summary

Evidences of the labor shortage are appearing in the widespread local reports coming to hand of inability to obtain an adequate labor supply. It is not necessary for us to arrive at a definite conclusion concerning the extent to which these reports are artificial. It is sufficient for the purposes of this study to point out that there are some evidences of a shortage now, when the construction volume is only about 50% of that we previously thought to be normal.

That the present supply of building mechanics is less than it was in pre-depression years, and that the decline has not been offset by an adequate program of apprentice training cannot be denied. Whether the shortage is here now or will be here later in 1937 - or even in 1938 - we can conclude that later in the present building cycle the labor question doubtless will become a brake on the attainment of the optimistic expectations that many people have.

THE OUTLOOK FOR NONRESIDENTIAL CONSTRUCTION

Industrial Construction

In most cases industrial construction is synonymous with the term expansion. A decision to replace or add to plant capacity depends upon many factors -

1) Physical depreciation through ordinary wear and tear,
2) Obsolescence because of technological improvements,
3) Costs of construction materials and interest rates,
4) Extent and nature of unused plant capacity,
5) Trend of manufacturing earnings, and
6) The management's appraisal of the future general outlook.

The first two of these considerations cannot be accurately measured and weighed in a tendency to expand except over a considerable time interval. Undoubtedly they are important factors that enter into every decision to expand factory capacity, but considered alone they do not determine construction volume. Factories and equipment - like every other division of the building industry--are durable, hence their replacement is postponable. If physical depreciation becomes marked during a period unfavorable to expansion it usually results in an increase in alterations and repairs rather than in new construction.

The estimates of total construction in the United States from 1925 through 1936 bear this out. (Appendix, page I). For the five-year period up to 1929 alterations and repairs averaged around 2½% of the total estimated construction volume. The proportion of the grand total of construction during the deflationary period that followed increased each year to a high point of 8.2% in 1935. In some years of the unfavorable period the dollar value of alterations and repairs was below the average for the boom years of construction, but the proportion of the total was greater.

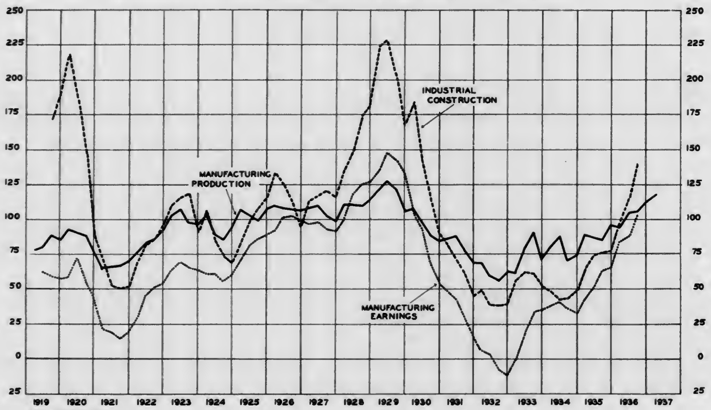
A period of deflation acts as a stimulant to technological developments having quickly realizable opportunities to reduce costs; but generally if the improvement requires considerable plant expansion it probably will be delayed. In other words there is a tendency to catch up with obsolescence during a favorable period.

Likewise, costs of construction and interest rates, important as they are, are not the dominant factors determining an expansion policy. The important thing is the prospect for a satisfactory return on the additional capital investment. While the level of costs in part determines this return, they are secondary to the general outlook for business activity - particularly at a time of extremely high or low periods in the business cycle. No matter how low costs are, a new plant will not be built if it cannot be used. Except for unusual technical improvements, it probably cannot be used in a period of declining volume of factory production.

Industrial construction can be stimulated by management's appraisal of prospects, but it is compelled by capacity volume and made possible only by earnings. Hence, an appraisal of these factors in the industrial construction outlook resolves itself chiefly into an examination of factors four and five. The changing fortunes of this division of the building industry can best be measured by following the trend of manufacturing production and earnings. Chart 12shows the trend of these factors since 1919.

CHART TWELVE

INDUSTRIAL CONSTRUCTION AND MANUFACTURING



SOURCE: SEE TEXT

The index of manufacturing production is the index of the Federal Reserve Board reduced to a quarterly basis. The index of construction is based upon the Engineering News Record figures of industrial contracts. This line has been smoothed to eliminate short term fluctuations. The index of manufacturing earnings is based upon compilations of the Standard Statistics Company.

The volume of industrial construction made two pronounced peaks. The first was in 1919 and early 1920; the second was in 1929. It will be noted that the only exception to a pretty close relationship between these three factors was the 1919 period. Undoubtedly this was due to the many changes made in manufacturing processes after the War and to important changes in depreciation provisions of the Revenue Act of 1918.

From the low point of the post-war depression down to the present there has been a close relationship in the direction of the trend of these three lines, but the amplitude of the movement has varied. The relation between industrial construction and earnings is closer than the relation between earnings and the volume of construction. When it is considered that the index of construction can be thrown off somewhat by the letting of very large contracts, the relationship is very close. Subject only to a minor interruption in the early part of 1930, the volume of industrial construction closely paralleled the downward earnings trend. Except for an upturn in contract construction in the second quarter of 1933, no really important rise took place until 1935 and 1936. These observations can be summarized thus:

1) There is a very close relationship in the trend of industrial construction and the trend of manufacturing volume and earnings; especially with the latter. Earnings not only provide the money for expansion, but they undoubtedly are the basic determinant of the psychology of management leading to expansion; hence industrial construction follows major and minor cycles of manufacturing activity.

2) The volume of factory production fluctuates less than the earnings derived from this production, and building fluctuates most of all.

3) Industrial building has a cycle which is unlike the cycle of other divisions of the construction industry, such as residential building, where the level of costs, prices and interest rates are more of a dominant factor in decisions to build.

4) New building, that is expansion, is at a minimum when earn-

ings are low or when deficits are being reported. In the early stages of the cyclical upturn building proceeds in line with volume and earnings. As the rate of earnings increase and confidence in the outlook grows apace, industrial building proceeds at a faster rate until the time is reached when construction volume seems to feed upon itself. The result is a much wider amplitude of movement in the industrial construction cycle than in the basic factors that determine it.

5) At the peak there is widespread overbuilding.

This chart gives ample justification for an axiom of corporation finance - that the test of management is its ability to expand properly. More concerns are wrecked by management responding to the psychology of a good earnings period to grow bigger than by firm determination not to over-expand in order to take care of the last heaped up order of the business cycle.

When boom psychology is prevalent plants generally crowd capacity and the psychological responses of many business men are to predicate an expansion program upon an indefinite continuation of these conditions. Then it is likely that the earnings justification of much of this building will come, if at all, several years later.

Summary

The volume of industrial construction was stimulated in 1935 and 1936 by a sharp upturn in manufacturing production and earnings. After lagging below the line representing manufacturing production for five years, industrial construction in 1936 increased its pace faster than either volume or earnings. Part of this is long deferred work. Whether it is the beginning of a period that will culminate in a major or minor peak, time alone will tell.

Many lines are now crowding capacity. Earnings are relatively favorable to pay for expansion. An added factor in the favorable 1937 outlook is that increasingly high wage rates have given a further impetus to expansion for technological reasons. We expect that industrial construction in 1937 will show a 50% increase over last year. The increase will be most pronounced in the steel, paper, oil and chemical industries.

The outlook for industrial building is as broad as the outlook for business itself and is subject to all of the hopes and fears that business men have. Strong factors work for high volume. Equally strong factors work against it, the chief of which are:

1) Mounting level of all taxes.

2) Undistributed Profits Tax.

3) General uncertainty making it difficult to see very far ahead in this period of social and economic reconstruction which is reflected in the current readjustments in the relationship of business and government, and business and labor.

Commercial Construction

The trend of commercial building construction is somewhat more dependent upon local conditions than is the trend of industrial construction. Interest rates, construction costs, and other elements that enter directly into annual carrying charges are of greater importance in determining the volume of new construction. While these factors are important in planning industrial expansion their weight is off-set by the trend of manufacturing production and corporate earnings.

In Chart 13 we show the trend of commercial building in the United States based upon a quarterly index of commercial construction as reported by the Engineering News Record. Also shown is the trend of vacancies in office buildings as reported by the National Association of Building Owners and Managers. This percentage is based upon figures for office buildings in a large number of cities. Vacant space is reported as the total percent of rentable office space.

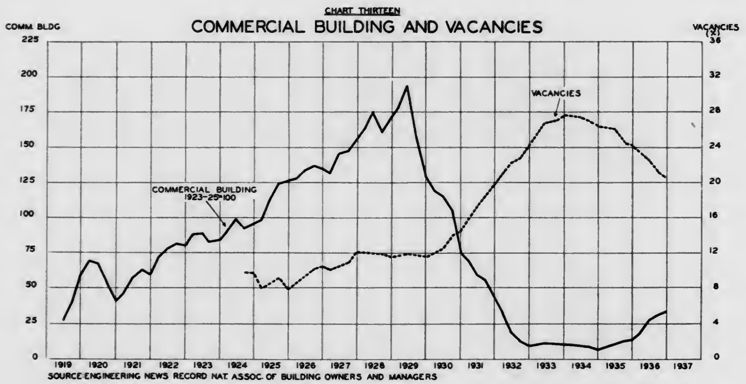


CHART THIRTEEN
COMMERCIAL BUILDING AND VACANCIES

SOURCE: ENGINEERING NEWS RECORD NAT. ASSOC. OF BUILDING OWNERS AND MANAGERS

The Engineering News Record index is based upon the total of all types of commercial building construction. Hence the two indexes are not strictly comparable, yet an important relationship is shown which will apparently support a definite conclusion as to the immediate trend of this type of construction.

It seems that commercial building construction is substantial when the vacancies run from 8% to 10% of the total rentable space. If they are higher than 12%, the volume of new building is likely to be curtailed.

Vacancies reached their high point on January 1, 1934 when important cities indicated 27.57% of total rentable space as unoccupied. Since then there has been a generally downward tendency. On January 1, 1937, the latest report available, the percentage stood at 20.51. So long as there is this proportion of unused office space, we are not likely to see a sustained and prolonged increase in office building construction. Competition from such a large amount of unoccupied space will doubtless continue to hold rents down toward the level where expansion is not greatly stimulated.

There doubtless will be increases reported in this total for the country, but there will be no general encouragement to speculative building until the vacancy percent again approaches 12%. It has required three years for the percentage to decline six points. It is unlikely that another 8 points decline will set in immediately.

There are some significant variations from the national average included in the general index. Among major cities, Washington, D.C. is the most nearly "rented up". The occupancy figure for that city was nearly 99%. The vacancy figure for New York is about average. The highest percentages reported by the large cities were -

Chicago	24.72
Philadelphia	27.09
Detroit	30.67
St. Louis	33.36

The figures for individual cities reported by the Association of Building Owners and Managers for January 1 make an interesting comparison with those for October 1, 1936, the last reported date in 1936. Only five cities reported a contraction in space requirements. All of the other showed a definite tendency toward absorption of available space. The largest net expansion was shown by Chicago.

There is a considerable regional variation in the vacancy percentage. The lowest figure was reported by the Southern District (14.97) followed by the Southwest (17.95), Pacific Southwest (19.68), and the Midwest and Northern (19.86). The greatest proportion of vacant space was reported by the New England area (23.01) followed by the North Central District (22.85).

Competition among property owners for new tenants resulted last year in a large amount of rebuilding of store fronts, modernization of heating and ventilating systems, et cetera. This tendency is likely to continue for some time. Dollar volume from this source and in local areas where the vacancy percentage is below 12% can be relied upon to expand the 1937 total materially, but the level for the year is not likely to be substantially greater than about one-third of the 1925-28 average.

Private Utilities

During the twenties there was a substantial yearly improvement in the expenditures undertaken by private utilities. This was particularly true of electric power where capacity and output grew at the astonishing rate of about 10% annually. Construction expenditures for the average year after 1925 were about $1,900,000,000. Electric power was the largest item in the group with about 34% of the total. Railroads with 21% of the total only slightly exceeded telephone and telegraph. The peak expenditure for this group did not come until 1930. The usual decline followed so that by 1933 the total was only about 20% of the previous record expenditures. General improvement has now lifted the total to about 50% of the 1930 peak, the bulk of this improvement having been reported in 1936.

In the electric power industry it requires two years to plan and build a large steam plant, and from two to seven years for a large hydro plant. This made it impossible to curtail substantially the policy of the industry to provide adequate standby capacity. Total generating capacity continued to expand through 1933. By the end of 1930 about two thirds of the total capacity of the industry was under ten years of age. Maintenance and replacement were, therefore, held at a low level in subsequent years when a decline in electric consumption provided no outlet for the industry's enlarged plant.

Since 1933 output has expanded so sharply that it is currently running from 15% to 20% above pre-depression highs for similar periods of the year. Customers number about 7.8% more than in 1929. The indicated current capacity factor, meaning the ratio between peak load and generating capacity, is about 8% over what was thought to be normal in 1929. Consequently, should demand continue to increase as now indicated a large building program for utilities must be undertaken. It has been estimated that in the next two years approximately $850,000,000 will have to be spent for generating and transmission equipment.

Because of shifts of population during the depression and the expected further revival of housing construction in new areas, it is believed that the demand for new telephone connections will only imperfectly fit the reserve facilities that the industry now has. Furthermore, if telephone connections advance to a new peak the industry could not long avoid expenditures in excess of the twenties. This is because plant and equipment expands more rapidly than the number of telephones in use. It seems reasonable to estimate that the time is not far away when expenditures will approach the level of the late twenties.

The telephone and telegraph industry like electric power was forced to make large capital expenditures in the period 1925 to 1929. Since about 90% of the plant investment in the telephone industry is controlled by American Telephone and Telegraph Company, capital and maintenance expenditures are controlled to an unusual degree by long range planning. As a result, group expenditures held up better than other divisions of the private utility industry.

These large expenditures in the early depression years, together with the decline in the number of telephones in use, led to a very large surplus of facilities by the close of 1933. An expansion of telephones installed began in 1934 and has continued to date, with extraordinarily large increases being currently reported in 1937. Somewhat more than half of the ground lost during the depression has now been regained. Probably there is still a substantial reserve capacity which will eliminate the possibility for very large immediate construction expenditures.

State and Local Government Construction

Included in this division are the expenditures of cities and local governmental divisions and state governments for a variety of public services. In the four-year period 1925 through 1928, which we have been using for comparative purposes, the annual average expenditure of these governmental agencies was $2,200,000,000. Expenditures on roads and streets accounted for about 53% of this average yearly volume. The next largest item was public buildings, which accounted for 24% of the total. Schools were the largest item in the public building category. Sewers and waterworks comprised over 12% of the total. The balance, about 11%, consisted of recreation, land improvement, and minor items.

Total construction expenditures by these governmental bodies held up better than the other groups. In the early part of the depression local bodies made strenuous efforts to maintain public works as an unemployment relief measure. By 1933, however, they were not able to maintain appropriations because of declining tax collections and pressure to make direct appropriations for relief. There followed in 1934 and 1935 a return to the pre-depression scale of expenditures. This was sharply increased in 1936 to a level substantially higher than was the case in any normal year.

The increase since 1933 has been due for the most part to larger loans and grants from the Federal government. In a normal year such grants did not exceed 4%. In 1934 68% of such expenditures came from Federal government appropriations. During the last two years the Federal government has given to states and municipalities about $1 for each dollar that they expended. At the same time a change took place in the type of construction work undertaken. The proportion allocated to roads declined somewhat. Public building received a greater proportion. The largest increase was for recreation and power and light.

Future appropriations for public works will depend largely on the following factors:

1) The physical needs of the community.
2) Public policy with respect to expansion of governmental responsibilities for the individual.
3) The governmental debt structure and costs of further borrowing.
4) Competition with budget expenditures for other purposes.

The need for public works is chiefly determined by population growth and rising standards of living. This accounts for the huge increase over the last several decades.

It is expected that population growth will level off, and to the extent that it does so, the need for additions to take care of population growth will decline. This will be offset, however, by the necessity to expand maintenance charges on the larger physical plant erected in the twenties. In spite of the well maintained total expenditures in this group there probably is some accumulated deficiency.

National population increased 5.7% from July, 1929, to July, 1936. Public school enrollment increased about 7%. There is probably a need for some further building in this line, particularly high schools where the bulk of the increase in enrollment took place. It seems likely that there is some deficiency in sewers and waterworks, particularly when we consider that residential building will advance for several years. In 1935 the PWA found that needed public construction totalled more than $12,000,000,000, but need for

public construction, however, is not as important as the willingness of the people to tax themselves to meet the need.

It is impossible to balance these factors and arrive at a close estimate of the future trend of public expenditures. The trend in the past has followed the prevailing standard of living and this factor will continue to make for a high level of expenditure.

There has been some tendency for municipalities to pay for a larger proportion of their outlays from current revenue rather than from borrowings. The general fiscal condition of municipalities has improved markedly as tax collections picked up. The low level of interest rates is conducive to public expenditures, particularly of the kind which are revenue producing.

It seems safe to conclude that street and road construction and repair work along with the physical needs of population growth will require the maintenance of public works expenditure at least equal to the average of previous "normal" years.

SUMMARY

Commercial and industrial construction will probably increase this year about 40% over 1936, but the total will still be less than half the average yearly volume of 1925-28. This inability to advance closer to pre-depression levels probably reflects two influences more than any other -

1) Conditions are not favorable to skyscraper development in 1937 which comprised an important part of the total of the 1925-28 volume. This type of building was financed mostly by sale of mortgage bonds and certificated mortgages. Securities of this sort can't be sold today.

2) In spite of low long term interest rates, corporations are reluctant to borrow too much new money for plant expansion. Taxation of undistributed profits keeps earnings available to pay for expansion at a minimum. The present volume reflects the necessity of the moment rather than the unrestrained optimism of the late "new era".

These groups together with expenditures by the private utilities will provide most of the increase in total contracts awarded this year not accounted for by residential expansion. Public works will decline. The decrease will be somewhat more than appeared to be the case three months ago. This is due to a slowing down in Federal appropriations and to Mr. Roosevelt's recently announced intention to withdraw stimulation from the durable goods industries.

For the past three years expenditures for public buildings - social, recreational, educational, hospitals, and other quasi public building - may be classified in a group which has been most dependent upon public funds. Probably three-fourths of the sum spent on them came either from federal, state, or municipal governments, with the Federal government contributing more than states and municipalities. Hence, the volume in these groups will follow closely the trend of Federal appropriations on building projects.

The reports available covering the early part of this year indicate that public and private financing of building have reversed their position of the last two years. In January and February last year private financing comprised only 36% of total contracts awarded, whereas in the similar period of this year private work had advanced to 58% of the total.

OUTLOOK FOR RESIDENTIAL CONSTRUCTION

The American Housing Structure

A logical point of departure for a study of the outlook for residential construction and its contribution to the present building cycle is to see what our existing housing structure is like. Manifestly, it is difficult to develop a composite picture of American housing. Houses reflect tastes and the individual incomes of the owners to a degree that makes extensive generalizations difficult. There is too much variety to reduce our dwellings to an "average home" basis unless we generalize on characteristics of the house by taking one factor at a time.

It is not easy to visualize an "average American home" that includes a North Shore estate, a slum block, an Iowa farm, and a company mining town. The best that can be done is to present a descriptive statement of the basic factors affecting home building and ownership.

Before doing this it might be well to see how important housing is in the total of our national assets. Sociological studies of housing in various nations indicate that in the early development of a nation the value of its buildings is small compared with that of its land. As the nation moves toward industrialization building values approach or even exceed land values. One of the best estimates* of the relationship of land and building values covers the year 1930:

		% of Total
Total estimated wealth in the United States	$425,000,000,000	
Land value	125,000,000,000	29.4
Residential dwellings	70,000,000,000	16.5
All other buildings	45,000,000,000	10.6

From this it is clear that building values are important to the nation and the distribution of this value, especially that of residential units, is of prime importance in the country's standard of living.

*Bemis: The Economics of Shelter.

The Census of 1930 reported that American housing is about equally divided between owned homes and rented dwellings. This is true both for the total of all homes in the United States and for its major subdivisions, farm and non-farm homes.

Tenure of Homes - Farm and Nonfarm for the United States: 1890-1930

	1930 %	1920 %	1910 %	1900 %	1890 %
All Homes	100.0	100.0	100.0	100.0	100.0
Owned	46.8	44.6	44.8	45.1	47.8
Rented	51.2	53.2	52.8	51.5	52.2
Tenure Unknown	1.9	2.2	2.3	3.4	-
Farm Homes	100.0	100.0	100.0	100.0	100.0
Owned	52.5	56.7	62.7	63.9	65.9
Rented	44.5	40.8	37.1	35.3	34.1
Tenure unknown	3.0	2.5	0.2	0.7	-
Nonfarm Homes	100.0	100.0	100.0	100.0	100.0
Owned	45.2	40.0	37.1	34.7	36.9
Rented	53.2	57.9	59.6	60.5	63.1
Tenure Unknown	1.6	2.1	3.3	4.8	-

Source: United States Census, 1930.

From this data it appears that there have been no marked changes between total rental and ownership tenure over the last forty years. There has been, however, a downward trend in the ownership tenure of farm homes and an upward trend in the ownership of non-farm homes. For this study we can safely assume that the American housing structure, taken in its entirety, will continue to involve in the near future dwelling units half of which are owned and half of which are rented.

According to the Real Property Inventory of 1934 covering 64 cities, about 54% of the owner occupied single family dwellings were mortgaged. For the year 1930 the Department of Agriculture estimates that about 42% of our owner occupied farms were mortgaged.

The United States is predominantly housed in one-family units. A detailed comparison of the number of dwelling units and their distribution among families is shown in the table on the following page .

Dwellings & Families by Classes

Type & Class of Dwelling	Dwellings	%	Families	%
Total	25,204,976	100.0	29,904,663	100.0
One family	22,833,110	90.6	22,833,110	76.4
Two family	1,728,087	6.9	3,456,174	11.6
Three-or-more family	643,779	2.6	3,615,379	12.1
Urban	12,982,655	100.0	17,308,480	100.0
One family	10,937,817	84.1	10,937,817	63.1
Two family	1,430,570	11.1	2,861,140	16.6
Three-or-more family	614,268	4.7	3,509,523	20.3
Rural Non-Farm	5,553,640	100.0	5,927,502	100.0
One family	5,226,612	94.1	5,226,612	88.2
Two family	297,517	5.4	595,034	10.0
Three-or-more family	29,511	.5	105,856	1.8
Total Non-Farm	18,536,295	100.0	25,235,982	100.0
One family	16,164,429	87.2	16,164,429	69.5
Two family	1,728,087	9.3	3,456,174	14.9
Three-or-more family	643,779	3.5	3,615,379	15.5
Total Farm				
One family	6,668,681	100.0	6,668,681	100.0
Two family	-	-	-	-
Three-or-more family	-	-	-	-

Source: U. S. Census, 1930.

For the entire nation over 90% of our dwelling structures are one-family units which house 76.4% of our total number of families. Farm housing is entirely of the single unit variety. Rural non-farm is nearly so. Even in the urban group 63% of our families occupy single dwellings and only 20% are housed in structures which are occupied by three or more families.

Most of these multiple units are concentrated in the states of California, Illinois, Pennsylvania, New York, and Massachusetts. In the urban group where most of the larger apartments are found, the average size of the three or more family type is a 5.7 family dwelling. This suggests that while 20% of the urban families are in multiple family units a much smaller proportion live in what we commonly term an apartment house.

The period since 1920 is commonly thought of as an era of rapid expansion of apartment house living. This belief is largely due to the reports of the Bureau of Labor Statistics of types of dwelling units erected in 257 identical cities of the United States during the period 1921 to 1936. Of the total number of units built during this period 39% were the multi-family type. This is not indicative, however, of the rate of shifting to apartments in the entire country. Further conclusions on this trend can be drawn from the census information reported in the table on page 66.

From 1890 to 1930 the number of families per dwelling unit increased from 1.11 to 1.19. Most of this shift away from single family dwellings took place in the decades ending in 1910 and 1920 rather than in the census period ending in 1930.

We have stated that American housing is characteristically single family housing, half owned and half rented. While this is true on the average there is considerable variation among income groups. The following table shows the distribution of renting and owning families according to home values:

VALUE OF OWNED AND RENTED HOMES

	Owned Non-Farm		Rented Non-Farm	
Value	Cumulative %	% of total	Cumulative %	% of Total
$1,000	7.6	7.6	12.7	12.7
1,000 to 1,500	13.0	5.4	23.5	10.8
1,500 to 2,000	18.1	5.1	34.0	10.5
2,000 to 3,000	29.2	11.1	54.6	20.6
3,000 to 5,000	51.5	22.3	80.4	25.8
5,000 to 7,500	73.4	21.9	92.6	12.2
7,500 to 10,000	82.8	9.4	95.4	2.8
10,000 to 15,000	91.4	8.6	96.7	1.3
15,000 to 20,000	94.6	3.2	97.1	.4
over 20,000	98.0	3.4	97.5	.4
not reported	100.00	2.0	100.0	2.5

Source: U. S. Census 1930.

The direct comparison of this table between the value of owned and rented homes is made on the usual rule-of-thumb basis that a rent capitalized at the rate of 1% per month will give the approximate value of the rented property. Hence, rented homes classified as having a value under $1,000 are those whose monthly rental payments are under $10.

When the cumulative percentage showing the portion of all homes

included under a given value is compared with similar percentages for the rented group it becomes evident that home ownership is concentrated in a higher valuation bracket than is the case of rented premises. In the owned group only slightly more than half of the total homes have a value under $5,000, whereas over 80% of the rented homes are so included. The median value of the owner-occupied half of our dwelling units is about $4,800, whereas the rented portion has a median value of only $2,700.

There are several reasons accounting for this. We have not at any stage of our development as a nation built homes for the low income class. The lower groups live in the second hand and cast-off units of the higher brackets. A second reason for the lower median value in the rental group is that families able to spend only a minimum for shelter may be forced to concentrate in multiple dwelling units where costs may be lower because the original construction cost was lower or because there were fewer rooms assigned to each family.

The American housing structure can be likened to an inverted funnel in which new construction enters at the top and is successively handed down to the lower income groups. If the amount of new construction flowing in at the top exceeds demolitions and requirements to meet population growth then it can be said that housing standards are increasing. If new construction does not exceed these requirements then the nation is being housed in dwellings that are progressively more obsolescent.

It is a striking fact that few houses are ever demolished in the United States to make way for the erection of a new dwelling unit of a similar type. The Brookings Institution has estimated that demolitions during the period 1920-1930 totaled about 700,000 units. Available information from other sources would lead us to believe that very few of these demolitions were due to complete physical deterioration. Probably one-fourth was due to condemnation for public use. Another third was accounted for by a change of the site to other uses. The remainder was accounted for by fire losses, obsolescence, depreciation, etc.

We are inclined to believe that in recent years total demolition of dwelling units in the United States, due to conversion, fire losses or any other cause, has been about one-sixth of 1% of the total housing units standing.

An interesting comparison can be made between our policy of handing down second hand housing and practices in the automobile industry. If the automobile industry pursued a similar policy the country would be full of high priced cars of varying ages with few cars in the low priced field. Instead of Fords, Chevrolets, and Plymouths, our average income groups would be driving around in ancient Lincolns, Packards, and Cadillacs. Under a system of this kind it is safe to assume that America's facilities for private transportation would be as poor as its housing.

There is no very complete information available on the physical condition of the housing structure. The best data on this point was compiled by the Real Property Inventory of the Department of Commerce in 1934. This study revealed that 44% of our housing needed minor repairs; over 15% needed major repairs; and over 2% was unfit for use. Eight percent of our dwelling units were vacant in spite of the fact that nearly the same percentage of families were doubled up with others.

It has been commonly assumed that the average life of residential buildings is about fifty years. Information derived from the Real Property Inventory and other studies suggests that from one-half to three-fourths of our residential structures are still in use fifty years after they are built. Except when a building is converted to other uses or destroyed by fire, its life seems to be chiefly dependent upon -

1) Physical depreciation,
2) Obsolescence, and
3) Changing character of the neighborhood.

It is probably safe to say that time alone is not as important in physical depreciation as obsolescence and the neighborhood influence. Rapid depreciation is generally due to faulty construction or inadequate maintenance. Physical depreciation is hastened when obsolescence and neighborhood influences react unfavorably on property values. Probably the most important of these three influences is the changing character of the neighborhood. So long as it maintains its character, depreciation can be reduced to a negligible amount - barring obsolescence. Obsolescence is chiefly a function of freakish architecture.

The average American has a deeply ingrained belief in the fundamental excellence of living conditions in this country. When we examine the American housing structure in the light of information revealed by census data, and the Real Property Inventory, supplemented with unemotional observation of individual units, we must arrive at the conclusion that American housing is below standard. It is common to list certain quasi necessities of modern life, such as telephone, central lighting and heating, as yardsticks for judging standards of individual properties. If we eliminate all of these as being unessential and base our conclusion upon factors

that react more directly upon health and morals - such as pure running water inside the house, healthful surroundings for the building, indoor sanitary facilities, ample space, sunlight and ventilation at a cost not to exceed 20% of family income - the facts appear to indicate that less than half of American homes measure up to minimum standards of health and decency.

Summary

Contrary to prevailing opinion, the recent decade did not accelerate the trend to apartment house living, for the United States is still housed chiefly in single unit dwellings. About half of American families are housed in owned homes - the other half rent. Over half of our dwelling units are located in cities the population of which exceeds 2,500; one-quarter are in small towns and cities; and, the remaining one-quarter are farm homes. In the last period of activity in the building industry the urban group was by far the most important source of demand for new housing.

New homes are seldom built for the rental class - mostly for owner occupancy. Since houses have a long life and few are torn down except for conversion to other purposes, demand for new housing from owner occupants varies widely as incomes change or real estate market conditions fluctuate.

Housing for the lower and middle thirds of our population is provided second-hand. This has prevented these groups from sharing very much in improving housing standards. Since we have not built enough houses thus far in this decade to meet population growth, the housing supply for rental occupancy has not increased. Maintenance and expenditures during the depression years were inadequate. The net result of depression influences and American housing policy is that less than half of our homes measure up to minimum reasonable standards.

Population and Housing Trends

Throughout our national history as an independent nation the intense activity required to house new and shifting populations has overshadowed the job of building for the old population. The record of growth in numbers, together with estimates of future population growth to 1980 is shown in the following table:

POPULATION AND AMOUNT AND RATE OF INCREASE
1860 - 1930

Increase during decade ending in year indicated.

Year	*Population	*Increase in Number	Percent Increase	*No. of Immigrants	% of Total Increase Accounted for by Immigrants
1860	31,433	8,251	35.6	2,598	31.5
1870	39,818	8,375	26.6	2,315	32.5
1880	50,156	10,337	26.0	2,812	24.2
1890	62,948	12,792	25.5	5,247	42.1
1900	75,995	13,047	20.7	3,688	27.6
1910	91,972	15,978	21.0	8,795	55.0
1920	105.711	13,738	14.9	5,736	41.7
1930	122,775	17,064	16.1	4,107	24.1
1940	133,100	10,300	8.4		
1950	142,900	9,800	7.3		
1960	149,800	6,900	4.9		
1970	153,800	4,000	2.6		
1980	155,200	1,400	0.9		

* These figures are in thousands.

Source: Estimated by Thompson & Whelpton in
"Population Trends in the United States"
(1933)

The decade ending in 1930 revealed the largest numerical increase in our population that any census period ever reported. This increase should not obscure two basic population trends that will have a marked effect upon the building industry as our population approaches balanced stability. These trends are:

1) The rate of increase has been declining.

2) As the overall rate of increase continues its decline over the next fifty years, it will be accompanied by a change in age distribution.

The connection between population and building cannot be emphasized too strongly. Without increase in population there would be no need for new construction, except for replacement and rising living standards. Hence the building industry, primarily, will be affected by these trends that are slowly but inevitably changing its market.

Thompson and Whelpton (Scripps Foundation for Research and Population Problems, at Miami University) estimated a total increase for the present decade of 8.4%. The sharper than anticipated decline in the birth rate due to the depression, combined with a stable death rate, indicates that this increase for the entire decade will not be achieved. Thus far in this decade the annual increases have averaged little more than .7%. In the similar period of the previous decade the average annual increase was around 1.5%. This does not mean that the need for new housing to take care of population growth in this decade will increase by the estimated growth in numbers of our population during this period.

The need for new housing follows the net number of new families coming into existence. The table on page 66 gives a comparison of the rate of population increase with that for families and dwellings. Roughly, dwellings have increased at a rate slightly higher than the rate of population increase twenty years before. The need for new housing from 1930 to 1940 will exceed the estimated percentage increase of population during the present decade. It can be estimated to be about 15%.

It is not difficult to show that economic and social consequences are bound to follow the decline in our national growth. It is practically certain to affect the constantly increasing intensiveness of the use of land for residence and business purposes. In the past land values have had a steady appreciation in most of our cities. It is reasonable to believe that the previous rate of increase will not again be duplicated for any extended length of time. The rapid increase in population of some of our cities during the past decade is due in part to the large increase in population for the entire nation, and in part to an occupational shifting of population.

The atmosphere of "booster estimates" still prevails rather widely. The combined "booster estimates" of a dozen of our large cities considerably exceed the nation's estimated total growth during the next 30 or 40 years.

A change in our immigration laws will materially affect our housing requirements compared with past periods when immigration comprised a substantial percentage of our total numerical increase. For the most part immigration implies an increase of adults. This leads to a need for housing more quickly than is the case with population increase through births.

POPULATION, DWELLING & FAMILY TRENDS IN THE UNITED STATES: 1850 to 1930

	1930	1920	1910	1900	1890	1880	1870	1860	1850
*Population	122,775	105,711	91,972	75,995	62,622	50,156	38,558	31,443	23,192
% Increase over preceding period	16.1	14.9	21.0	20.7	25.5	26.0	26.6	35.6	35.9
*In private families only	119,812	-	-	73,411	-	-	-	-	-
*Families, incl. instit. etc.	29,980	24,352	20,256	16,188	12,690	9,946	7,579	5,211	3,598
% Increase over preceding period	23.1	20.1	25.1	27.6	27.6	31.2	45.5	44.8	-
*Private families only	29,905	-	-	15,964	-	-	-	-	-
*Dwellings, incl. occupied by institutions	25,280	20,697	17,806	14,430	11,483	8,956	7,043	4,970	3,362
% Increase over preceding period	22.1	16.2	23.4	25.7	28.2	27.1	41.7	47.8	-
*Occupied by private families	25,205	-	-	14,206	-	-	-	-	-
Population per family, including institutions	4.10	4.34	24.54	4.69	4.93	5.04	5.09	5.28	5.56
Population per private family	4.01	-	-	4.60	-	-	-	-	-
Population per dwelling incl. those occupied by instit.etc.	4.86	5.11	5.17	5.27	5.45	5.60	5.47	5.53	5.94
Per private family dwelling	4.75	-	-	5.17	-	-	-	-	-
Families per dwelling	1.19	1.18	1.14	1.12	1.11	1.11	1.08	1.05	1.07

* Figures in thousands

Source: U. S. Census

Our housing requirements are still being influenced by the heavy immigration before the early 1920s. As time passes this influence will be eliminated and housing requirements to care for population growth will depend upon natural increase through births. This influence should become evident during the decade 1940 to 1950.

A slowly growing population adds comparatively few children to its numbers. Adults, survivors of a period when the birth rate was higher and immigration was greater, steadily pass into older age classes. Over the next 50 years this change will become quite pronounced in the make-up of our population. The percentage of persons under 20 has been declining for sometime. This decline will become one of absolute numbers by 1980 when it is estimated that the number of persons of this age will be about one-eighth smaller than in 1930.

This means, among other things, a change in our need to build new schools or add to physical equipment built primarily to accomodate the needs of youth. It means also that the rate of increase in the number of our families (the determinant of building requirements) will be smaller.

Population per family has declined steadily throughout the period covered by the table from an average of 5.56 persons in 1850 to 4.10 persons in 1930. Population per dwelling unit has followed this downward tendency in the size of the family. In 1850 there were 16,800 dwelling units per 100,000 of population. In 1930, because of this tendency to house our population in fewer persons per dwelling unit, we required 20,600 housing units per 100,000 of population. This influence has added to our need for housing construction. Not only have we had to build to meet a gross increase in population but in each decade we have built more houses per capita.

These underlying population trends carry an importance for the building industry of far greater implication than is involved in a mere statement of quantities. Building demand comes from two sources -

1) Population growth, and
2) Replacement for existing structures due to depreciation or obsolescence, fire losses, conversion to other uses, etc.

Housing volume has been geared to the objective of building for population expansion. It can almost be said that building for replacement has been a by-product of the main activity. Sooner or later the progressive decline in our rate of growth must force a change in objective. Up to now our population has had a larger proportion of people at the reproductive age than most other nations. As the temporary causes which have brought this about have disappeared, building must look more and more to replacement demand for its market.

This implies many changes in approach, the most basic of which is the realignment of costs. An accurate estimate of the division of past building arising from new and replacement demand cannot be made. There are too many variable trends interconnecting one another to permit an exact computation.

After giving much consideration to population trends having a bearing on the question, we are inclined to believe that building for replacement in each decade since 1890 has not exceeded more than 3% to 5% of the number of units standing at the beginning of each period. It would appear also that building for replacement from 1890 to 1900 was higher than it has been since. It is surprising that that period exceeded the replacement building of the 1920s which saw in terms of magnitude the greatest building boom in American history.

If a nation builds only as fast as is necessary to meet the increased number of families within its borders, then its national housing standards will decline. Housing standards are increased only by the amount by which new houses raise the general average. At the same time existing housing is aging, and hence decreasing housing standards. If the rate of growth is fast enough, the former may offset the latter influence, but there would still be a housing problem, for the effect of the declining standards would be unequally distributed throughout income groups and areas.

This does not give much support to the common belief that American housing standards have been progressively increased, for the rate of displacement has not been great enough. In England building in excess of needs due to population growth was many times the same rate of building in the United States during the period 1920 through 1936.

While new houses are being built for those at the top of the income scale, all other houses are declining in standards of livableness. The higher income groups are housed better - the lower income groups are housed at progressively poorer standards, uninfluenced by the amount of new construction taking place. Hence, it clearly follows that tearing down old houses and replacing them is as essential as new building, if we want to make uniform advancement in housing conditions.

This is the background for the blighted or slum areas that afflict

nearly every American city. As our cities grow and expand, the oldest residences in the line of the developing commercial district give way to commercial buildings and apartment houses. The population expansion of the city is taken care of by building new houses along the outer rim. If the business district expands fast enough, it may force residential construction in a way that materially improves the average housing level of the entire city. This is the exception. Usually the growth cannot be this rapid. This process has resulted almost uniformly in a housing pattern in our cities.

In the center there is the business district surrounded by a blighted area of old structures. The blighted area is surrounded by a better residential area on the outskirts of which new homes are being built. Houses in the blighted area adjacent to a commercial development are nearly always rental properties. Land values on which they stand are influenced by oncoming business development. A time is reached when the value of the land becomes more than the value of the residence. The old houses situated thereon are not replaced regardless of their condition because land value makes it economically impossible to do so; but, as a by-product of waiting to use the land for other purposes, they continue to be used to house the low income groups. Seemingly very little can be done about such an area except to wait for the growth that will convert them to business properties.

There is another type of blighted area or slum in nearly every city which is even more difficult to handle than areas adjacent to the business section. Usually this type of slum area is the heritage of an early trend of growth, the direction of which was not maintained. Land values are uninfluenced by conversion to other purposes. Most of these properties are rented. Their owners find it impossible to replace them with new buildings because the character of the neighborhood would make the value of the new building worth much less than the cost of construction. Hence, land and housing values decline together.

Eventually the properties do not carry themselves and they pass into the hands of mortgage or other lending institutions where they are re-appraised and again put on the market. This process is a slow one but it leads surely and inevitably to housing standards that are far below minimum standards of health and decency.

Interesting cases showing the dominant affect of population growth on housing policy is shown by an examination of the housing structures of Zanesville, Ohio and Dallas, Texas. During the last forty years Zanesville has had a population growth materially under the national average, while Dallas, Texas, has grown at a rate several times the national average. Significant comparisons illustrating supply and demand factors in these cities of widely varying population growth are shown in Appendix, page IV. These comparisons are based upon the Real Property Inventory of 1934 which covered the entire city in both instances.

For sometime the highest third of Zanesville's income classes have been replacing their housing and thereby increasing the supply of homes for the lower income groups. Population growth has not been rapid enough to absorb all of the housing made available. Some of the results of an ample space supply arising from age and a restricted demand due to a tapering off in population are:

1) Low rental rates. Nearly 76% of its properties rent for less than $20 per month. A high vacancy ratio contributes to this low rental scale.

2) Over 53% of its houses are more than 30 years old.

3) Space available per person is high. Nearly half of its houses afford two rooms per person and 86% have one or more rooms per person.

4) Much repair work needs to be done.

5) A more than average proportion of the city's houses do not have modern accessories; for example, over 37% are without bathrooms.

Rental rates are low and Zanesville's housing is not crowded because there is no shortage of low cost space since there has been enough property depreciated over a period long enough to reach the stage of blighted housing.

On the other hand, Dallas, Texas, is an example of housing trends in a city under earlier circumstances of growth. Population growth has been so rapid that the housing supply and demand factors have led to different results:

1) Rental rates are higher. Whereas three-fourths of Zanesville's houses rent below $20 per month, only half of the houses in Dallas rent below $20.

2) There is much crowding and space standards per person are lower in spite of a high vacancy ratio.

3) The physical condition of housing is better than in Zanesville and values are higher.

4) Only 2% of its houses are more than 50 years of age; in Zanesville over 25% of the total are this old.

It might appear that a combination of crowded housing and high rental rates would easily lend itself to correction by stimulating new building, but this is not the case because it is the poorer classes that need additional space. Since we have not been able to bring building costs down to a point where we can build new houses to be occupied immediately by the low income groups the poorer classes in Dallas will have to remain crowded until those at the top of the income scale discard the housing they now occupy - either because age has brought it below their standards, because the better class neighborhoods have declined in character, or because the value of the land has advanced out of proportion to the rental value obtainable from the dwellings upon it in anticipation of conversion to other uses.

With all of its space surplus and low rentals Zanesville's housing is substandard. In Dallas all requirements for good housing are not met because adequate facilities are not available to the lower income groups at rental rates they can afford to pay.

Summary

Population growth has thus far been the dominant factor in American housing policy. Building operations have been largely based upon a replacement market for our higher income groups which passed their discarded housing on to others. Building of a type characterized to raise American housing standards generally, and disassociated from the factor of population growth, has been a negligible quantity.

A slowing down of our population growth and its changing age distribution will profoundly affect the building industry over the decades ahead. The results will not be immediately apparent for we still have an enormous demand for new housing arising from a faster population growth of earlier periods. While the results will begin to be discernable in the decade 1940-1950, our accumulated needs for housing are so great that the affect of the population factor will be hidden in the upward phase of the present cycle.

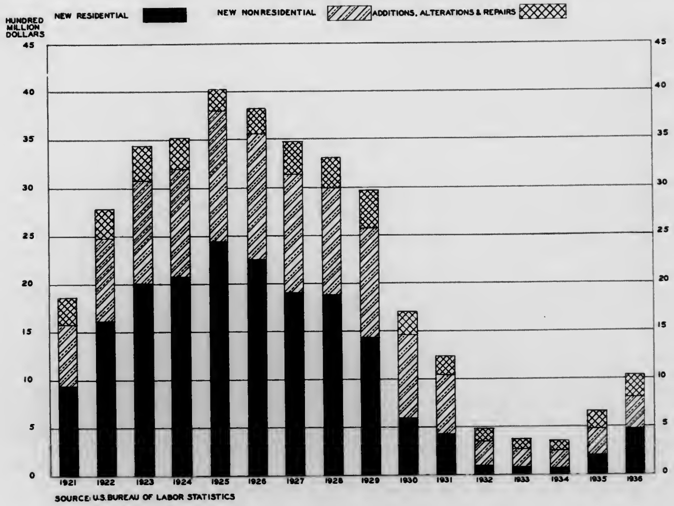
Housing in 257 Cities

The Bureau of Labor Statistics has published information annually since 1921 on the trend of building in 257 identical cities. This is a fairly satisfactory measure of urban building because it is available on a comparable basis and because the sample is a large one. The cities included in this compilation accounted for about 38% of the total population in the United States in 1933. The series does not properly reflect, however, the tendency in building in large cities to shift toward suburbs of the metropolitan areas.

Chart 14 shows the trend of urban building construction based on building permits in these cities. Chart 15 shows the trend of urban residential construction according to types of dwelling units built. From these charts it is apparent that building activity reached a peak in 1925 and that urban building construction in the four years following 1925 did not contribute to the peak volume of total construction reported in 1928. In fact, the volume of new residential construction in 1929 was only 58% of the peak established in 1925. Non-residential construction was 85% of the previous high level. Expenditures for alterations and repairs were the only expenditures of the three classes that exceeded 1925 levels.

CHART FOURTEEN

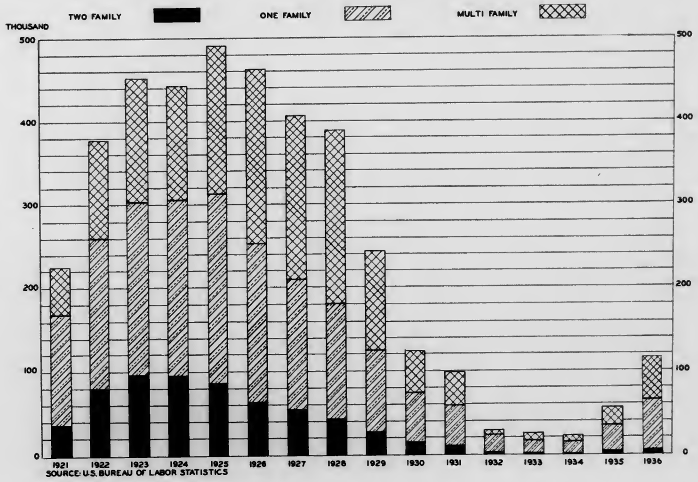
TREND OF BUILDING CONSTRUCTION
(257 CITIES)



SOURCE: U.S. BUREAU OF LABOR STATISTICS

CHART FIFTEEN

DWELLING UNITS CONSTRUCTED
(257 CITIES)



SOURCE: U.S. BUREAU OF LABOR STATISTICS

The trend in the number of families provided for parallels that of dollar expenditure. In 1925 new units provided homes for 491,000 families, or about 51.6% of the total number of dwelling units built in the entire country. By the time the downward phase of the building cycle had run its course in 1934 only 22,000 families were provided with new living quarters in these cities.

On a population basis 122 new dwelling units were built for each 10,000 persons in 1925. By 1934 building had declined to such a low level that less than five new family units were provided for each 10,000 persons.

Throughout the entire period there was no sustained change in the trend of distribution of the total units provided as between one, two and multi-family units. In the four years preceding 1929 the proportion of the total units comprising multi-family dwellings was higher than at any other time in the period. This reflects, however, the conditions in the money market which made speculative financing of this type of project very easy. As the real deflation got under way this type of dwelling declined in importance. At the bottom of the building cycle and thus far in the current phase of the recovery cycle, single unit homes have averaged somewhat higher as a proportion of the total than was the case in the similar recovery phase of the last real estate cycle.

The relative completeness of information covering these cities permits us to explore further the breakdown of the housing market as between building for population growth and building to replace older structures. In theory we can arrive at this breakdown by estimating depreciation rates on various types of structure and considering all of those over age as being retired. In practice this cannot be done for depreciation is not a fixed quantity. As we have indicated in our discussion of the American housing structure there is reason to believe that obsolescence and decline in status due to changing neighborhoods are more important in physical depreciation than the time factor.

Another method by which to arrive at such a breakdown is to measure the excess of new housing capacity built during a period over new population requirements and to consider the result to be the amount of housing available to retire old homes. The following table shows population increases and building in the 257 cities covered in Charts 14 and 15.

	Total Population	Increase of Population	Population Accomodated in New Housing	Surplus of New Houses over Population Demand	Accumulated Surplus of Housing over Population
1921	36,575,118	-	898,180	-	-
1922	37,511,516	936,398	1,509,220	572,822	572,822
1923	38,447,913	936,397	1,814,692	878,296	1,451,117
1924	39,384,311	936,398	1,771,676	835,278	2,286,395
1925	40,320,708	936,397	1,964,888	1,028,491	3,314,886
1926	41,257,106	936,398	1,848,856	912,458	4,227,344
1927	42,058,897	801,791	1,624,380	822,589	5,049,933
1928	42,767,125	708,228	1,554,712	846,484	5,896,417
1929	43,665,235	898,110	977,576	79,466	5,975,883
1930	44,850,467	1,185,232	501,288	683,944d	5,291,939
1931	45,896,339	1,045,872	392,712	653,160d	4,638,779
1932	46,647,939	751,600	109,524	642,076d	3,996,703
1933	47,411,848	763,909	103,516	660,393d	3,336,310

d - Indicates deficiency.
Source: U.S. Department of Labor, Monthly Labor Review, May, 1934.

The peak year of surplus of new houses over population demand came in 1925, the same year in which dollar expenditures and total units reached their all-time high. If we divide the population in this year by the "new excess capacity" for that year it appears that we were turning over our housing then only once in forty years. The average for 1923-7 shows a turnover of once in 45 years. After 1930 building did not meet new requirements. The deficit figures in the table, therefore, indicate a decline in our housing standards. Probably neither of these averages are representative because they measure the upper and lower ends of the business cycle. For the entire period 1921-33 the rate of turnover was .7% -- or a replacement of new homes for old at the rate of once in every 142 years.

This does not mean that existing buildings are on the average 142 years old. It means that at the present rate of turnover dwellings now built will remain in use for 142 years before they are finally torn down. It is difficult for the average citizen to accept this fact because of his observation of the vast amount of new housing which has been necessary to care for population growth.

Size of The Housing Market

On the basis of the number of homes standing in 1930 in relation to the population increases twenty years ago, we may estimate the demand for new dwelling units from population growth to be 4,500,000 units for the period 1930-40. If we assume that each of these units cost $4,000, the dollar volume of residential building necessary to meet population growth averages $1,800,000,000 per year. If we add to this a rate of turnover of once in every 142 years, replacement volume would amount to about $800,000,000 annually -- or a minimum annual volume of expenditure of $2,600,000,000.

Again this indicates the trend of deterioration in the American housing structure; for the average yearly expenditure since 1929 has been only $954,000,000.

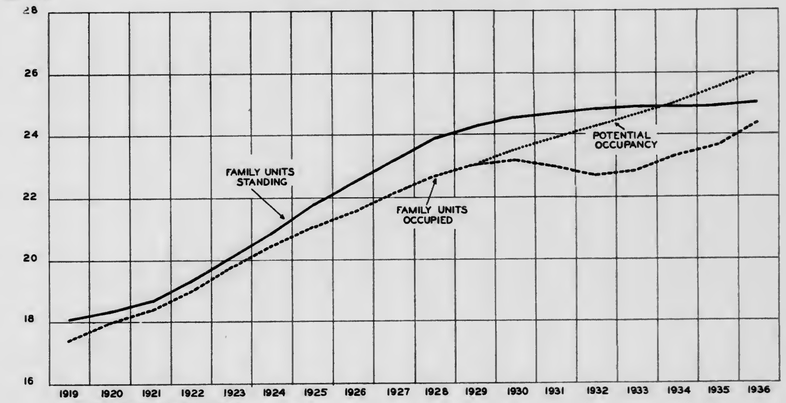
If we apply the 1925 rate of turnover the minimum volume of residential construction becomes $4,700,000,000 annually.

It is apparent that the United States must spend large sums merely to bring its housing back to the 1929 per capita level. In 1934, for example, we built only 60,000 family units -- only 13% of the quantity necessary to house new families.

Information relative to the size of the housing markets is summarized in Charts 16 and 17. In Chart 16 the line showing potential occupancy indicates the amount which would have been expected under "normal" conditions. The difference between actual and potential occupancy reflects the doubling up of families, postponed marriages, and a back-to-the-farm movement of population from the cities. The Real Property Inventory in 1934 showed that 7.0% of our families were doubled up in living quarters with others. Undoubtedly this high percentage reflects depression difficulties, but it also includes an undeterminable amount of doubling up in average times.

CHART SIXTEEN

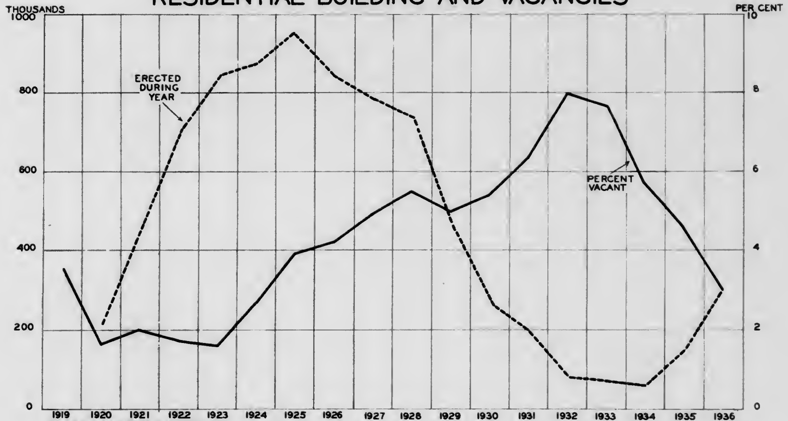
HOUSING OCCUPANCY



SOURCE: BROOKINGS INSTITUTION

CHART SEVENTEEN

RESIDENTIAL BUILDING AND VACANCIES



SOURCE: BROOKINGS INSTITUTION

From the standpoint of estimating a potential housing market we can conclude that most of this doubling up will reappear as a demand for new housing when conditions justify. Likewise, the trend of marriages since business recovery has set in suggests that postponed marriages of the first half of this decade will appear as a potential demand for new housing. In view of the fact that the farm population remained practically stationary throughout the 1920's it is reasonable to suppose that the recent increase in farm population was a depression phenomena. It cannot hold for any great length of time in the face of the declining rate in our population growth and further technological improvement in agriculture.

These three factors have in part offset the need for 450,000 new units per year which we have assumed to be necessary to meet population growth; but since they are temporary in nature they do not meet demand -- they merely postpone it.

According to Chart 17 the percentage of houses vacant has declined from a high of 8% in 1932 to around 3% in 1936. The present vacancy percentage is not much above the early 1920's when we were actively building new units. The Brookings Institution has estimated that our requirements over the next five years will be as follows:

Accumulated deficiency, 1930/36.........	2,000,000 units
Increase in urban families, 1937/41......	2,000,000 units
Demolished housing replaced 1937/41......	500,000 units

If these requirements are spread evenly over a five year period it would amount to about 900,000 units annually or about $4,000,000,000 a year. This may be compared with the annual average of 750,000 units during the five years 1925/29 and an average of 160,000 units during the last seven years.

Factors Restricting New Building

Only a blind optimist would forecast an average amount of building over the next five years indicated by this estimate of potential needs. By whatever amount actual volume falls below these estimates, seemingly it will not be due to any lack of natural demand.

Most houses in the United States are built for owner occupancy except apartments. They are built either under the direction of the owner or by operative builders who intend to sell them. Only a very small part of our new houses are built for immediate rental. The rental group is taken care of by secondhand houses. The prospective owner-occupant is, therefore, the key figure in an effective demand for new construction.

There are some intangible reasons why the prospective owner occupant is not in the market for new houses. This desire is affected by a feeling of insecurity arising from the recent period through which we have passed. In addition to this feeling of financial instability which may be holding back some, there may be another more important psychological factor. In the rising standard of living of the average American family a powerful and aggressive merchandising activity has characterized nearly everything the family buys, except housing. The average American is spending a higher proportion of his income for clothing, entertainment, travel, vacations, etc.; but a smaller proportion is being spent on the physical side of the home. There have been improvements in housing. The standards of convenience of the new home of today are superior to anything of the past. But in spite of this, expenditure for new homes does not effectively compete with other things in the scramble for the consumer's dollar.

These factors are intangible and not susceptible to measurement. Another, and by far the most important, reason can be more accurately measured. The basic reason why our natural demand for new housing over the next five years will not be fully translated into new construction is an economic one. This reason is simply that there are not enough individuals who can afford 4,500,000 dwelling units in the next five years.

Over 12% of American families can pay only $10 a month for housing. One-third of the population has an income of less than $1,200 and can afford to pay not over $20 per month for shelter. The middle one-third whose incomes will probably average between $1,200 to $2,000 is largely dependent upon the renting or purchase of old units. It is the upper third whose incomes average more than $2,000 who provide the bulk of the United States housing market. In regard to this point the average annual cost of housing by type of dwelling in 257 cities is of interest:

AVERAGE COST OF NEW DWELLINGS PER FAMILY IN 257 IDENTICAL CITIES

	1-family Dwellings	2-family Dwellings	Multi-family Dwellings	All Classes of Dwellings
1921	$3,972	$3,762	$4,019	$3,947
1923	4,203	4,159	4,001	4,127
1925	4,618	4,421	4,289	4,464
1927	4,830	4,368	4,170	4,449
1929	4,915	4,020	4,402	4,566
1931	4,834	3,607	3,644	4,225
1933	3,844	3,110	3,040	3,494
1934	3,801	3,316	2,612	3,381
1935	4,228	2,955	3,201	3,759
1936	4,432	3,038	3,754	4,073

Source: U.S. Department of Labor

Note: These figures are not actual costs of the completed building. They do not include land cost and certain other items.

There is a proven rule-of-thumb to the effect that expenditures for new housing should not be more than two times the family's annual income. A study of the U. S. Building & Loan League in 1930 indicated that families whose income does not exceed $1800 should not spend more than 1.75 times their income for a home; and those with incomes from $2100 to $4800 should not spend more than 1.9 times. This would restrict most families from buying new houses for original occupancy, even if we make full projection on an annual basis -- without any allowance for unemployment or partial employment -- of the recent sharp increase in wage levels.

The National Industrial Conference Board reported that the average weekly wage per skilled worker for December, 1936, was $30.25. If we ignore the fact that the 1932 average pay per skilled worker was only 65% of this amount and that most workers were not employed even at that level, the maximum annual earnings for the skilled group would be $1,573. If the December average of unskilled workers is projected on a similar basis the average annual earnings would be $1,137. Even on this over-generous basis skilled workers could not pay much more than $3,000 for a new home, and unskilled workers could not pay more than $2,000.

The "Railroad Age" recently stated that the average annual salary of railroad employees was $1,734 in 1936. It is commonly assumed that railway workers are among the best paid of all workers; but even they could not afford new housing if it costs as much as the average urban residential construction cost in 1936.

Mr. Frank Watson, formerly general counsel for the Federal Housing Administration, has studied 1929 incomes and has arrived at the following conclusions on housing and incomes in the United States:

A $2,500 house is too expensive for 35% of American families.
A $3,400 " 53% "
A $4,200 " 66% "
A $5,100 " 75% "
A $6,100 " 80% "

It should be kept in mind that 1929 incomes were the highest in the lower brackets that this country has seen.

Residential Costs

It is difficult to measure directly the cost of a house. The cost of a house does not lend itself readily to statistical measurement. Primarily this is due to the fact that each house is an individual item similar to but differing from every other house. The proportions of the various elements entering into costs are quite variable. They depend upon the type of dwelling, the character of the community, materials of construction and the method by which the house is purchased. In spite of these variations there is a broad relationship between the major cost divisions. The most important of these relationships is brought out in the following:

	Cost of Building Alone Excl. Overhead	Cost of Building Including Contractor's Overhead and Fees	Cost of Completed Building and Land
Materials	60%	52.5%	42%
Labor	40	35	28
Fees & Financing		12.5	10
Land			20
	100%	100.0%	100%

This table can be used in connection with Chart 9, which shows the price trends of building materials and labor rates. The cost of the completed house can be divided into --

1) The cost of the structure,
2) The cost of financing, and
3) The cost of land.

There are definite limitations to the possibilities of reducing expenditures for land and financing. There are certain basic minimums in land costs which set limits to the possibilities for further reduction. Residential property calls for streets, sewers and other improvements. These comprise a substantial proportion of land costs. The supply and demand factors of the land market in recent years have been such as to lead us to believe that the price of residential land is not out of line with its components, the cost of improvements and the cost of vacant land.

There are probably enough subdivided and vacant lots in the United States at the present time to take care of our housing developments for some time to come.

Much progress has been made in recent years toward cleaning up the improper financing costs which characterized the last cycle of residential building. The long term, single and amortized mortgage is now accepted as a superior financing type. Long term interest rates are now at low levels. General mortgage rates have also declined, but to quite a smaller degree. Many uninsured mortgages being placed today directly with the lending institutions carry interest rates considerably below the ruling rates of ten years ago. These savings have been augmented by the elimination of many discounts, commissions and fees.

In the case of mortgages insured by the Federal Housing Administration the effective interest rate to the borrower has not declined as much as in the case of those mortgages placed directly with the lenders. The rate of interest obtained has declined but this savings has been partly absorbed by the larger administrative costs involved in the monthly amortization of a long term mortgage. The net savings in this type of mortgage over ten years ago consists of the elimination of the excessive charges and discounts on second mortgages prevalent at that time. While there are possibilities of making further small reductions, financing costs, like land costs, do not offer the broad possibilities for reductions which seem to be vitally necessary.

It follows that the reductions must come, if they come at all, in the cost of the structure. Material costs may be further subdivided thus:

% Allocation	Division	Explanation
45 - 50	Structure	Excavation, masonry, rough carpentry, roofing, cement, etc.
25	Finish	Finished carpentry, plastering, painting, finished hardware, etc.
25	Accessories	Plumbing,heating,wiring,fixtures, etc.

It is evident from this breakdown of costs that no single element is responsible for the fact that American housing costs are out of line with our ability to pay. It is clear that cost reductions of any consequence cannot be made by one factor alone. The job of bringing building costs down requires a complete and rounded attack on the problem by all phases of the industry. At this point it might be well to summarize the many reasons for these high costs:

1) The building industry is a group of disorganized local activities not integrated nor standardized, largely doing its work by inadequate assembling methods.

2) Seasonal fluctuations are sharp. This means that idle plant capacity at the low point of the year must be carried by operations at the peak. Likewise the plant capacity of the industry is unadjusted to major fluctuations in demand. In boom periods the entire capacity of the industry is taxed. At the bottom of the real estate cycle the industry's capacity largely lies idle.

3) Tradition dominates many phases of the industry. It reflects itself in such ways as the lack of standard specifications. This increases costs all around -- particularly distribution costs. For example, there are between 1200 and 1500 patterns of lock hardware; 19,000 sizes of valves and pipe fittings; 139 sizes and kinds of paint brushes; 18 kinds of slate laundry tubs; 32 thicknesses of one inch board.

4) Labor costs are high on an hourly rate. Building trade union labor is strongly unionized. It is divided into so many crafts that frequently it results in inefficiency. Union struggles over jurisdiction increase costs for contractor and owner alike. The payment of a standard wage in a skilled occupation without regard to differences in efficiency is another item.

5) High taxes.

6) Building codes sometimes entail a serious addition to costs.

7) The consumer himself is occasionally one of the major causes of high costs. Too frequently owners undertake to build a new home without proper preparation and knowledge of the operation. Having once decided to build, most people insist on speed even though it increases costs.

The prime reason for higher costs from the owner's view-

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5) High taxes.

6) Building codes sometimes entail a serious addition to costs.

7) The consumer himself is occasionally one of the major causes of high costs. Too frequently owners undertake to build a new home without proper preparation and knowledge of the operation. Having once decided to build, most people insist on speed even though it increases costs.

   The prime reason for higher costs from the owner's view-point, however, comes from his sometimes unreasonable insistence on individuality. Changing plans after operations commence is always costly. Only a minority of home builders in the United States seek professional advice from an architect before building.

8) The concentration of leasing dates on one or two days of the year disorganizes the industry more than is generally supposed. It requires, for example, rush work on painting and repairs at a time when there is an active demand for labor for new construction. This disorganization reaches back to the building contractor, the landlord, the architect, building workers and material producers.

All who are interested in the building industry agree that costs are too high but there is no unanimity of thought on how they can be brought down. There appear to be few possibilities for worthwhile reductions except in the cost of the structure. These possibilities naturally fall in the categories of labor, materials and organization of the industry. A rough classification of the possibilities might be the following:

1) Lower material prices by the producer,
2) Lower labor costs -- reduction in hourly wages of labor,
3) More efficient planning of the house structure,
4) Mass building operations to secure greater efficiency and to reduce material costs through mass purchasing power,
5) Changes in the distribution system, and
6) Use of more labor saving devices on the building site.

1) Lowering of Material Prices by the Producer

The cost of plumbing, heating, and other accessories now comprises a substantial proportion of the total cost of the housing structure. Since these items are already produced on a mass production basis, their manufacture does not offer opportunities to reduce costs as much as those parts of the building process which have not been industrialized. This is shown by a similarity in the price movements of building materials and all commodities. Even if we could decide that building material prices should be reduced, there would remain the question of how to make these reductions in order to stimulate an increase in volume which would offset them.

A reduction in the selling price of those items which are first in the line of production and distribution will not benefit the home builder to the same degree that a reduction will from the retailer or in other costs incurred at the site of construction. Suppose a lumber producer reduces prices by 10%. Such a reduction would probably reduce his profits to a point where a 100% increase in volume would be necessary to offset the lower profit margin. By the time the lumber on which the 10% reduction in price has been made reaches the home builder the price the latter pays for the product consists about half of the wholesale value received by the lumber producer and about half transportation and other costs; hence a 10% cut in the wholesale price of lumber becomes a reduction in price of about 1% to the home builder.

As a practical matter there are few if any possibilities in this direction, especially at the present time of increasing wages paid to factory labor and a generally advancing commodity price structure.

2) Lower Labor Costs - Reduction in Hourly Wages of Labor.

The widest possibilities for reductions are to be found in labor costs. Labor rates not only are out of line, but any reduction could be entirely carried through as a decrease in the cost of the final product. A possible reduction in labor hourly rates cannot be discussed from the point of view of economics alone, for it immediately runs into strongly emotional considerations. The home builder of modest proportions whose daily wage is not very large is apt to fail to understand why he should pay a carpenter a daily wage several times what he receives. The home builder looks on it simply as rates per hour. The laborer, on the other hand, sees it from the point of view of average weekly or monthly return.

If the line in Chart 9 showing hourly wage rates is superimposed upon Charts 14 and 15 giving the trend of building in 257 cities, it becomes evident that while labor has maintained its rate of pay it has suffered an acute decline in yearly income.

From this it is simple to suggest that labor rates should come down in order to make possible a greater volume of building, but again we come across substantially the same consideration we found in the case of the lumber producer. Total material costs exceed total labor costs. There is strong reason to believe that a reduction in labor rates alone would not increase construction sufficiently so that the net annual return to labor would be as great as it now is. Furthermore, since labor lives on a hand-to-mouth basis it has no effective means of absorbing the reduction between price reduction and a rising volume of construction, even if it were certain that the latter would follow.

3) More Efficient Planning of the House Structure

In recent years the architectural profession has made notable progress in more efficient planning of housing units, so as to obtain the same livable area in a smaller house. It is apparent that there are definite limitations to this method of cost reduction.

4) Mass Building Operations to Secure Greater Efficiency and to Reduce Material Costs Through Mass Purchasing Power.

Numerous instances have come to our attention in the past year of cost reductions made through a better organization of the building process. In Meadville, Pennsylvania, for example, 202 frame houses of different types were built in a development at a cost reduction of about 25%. These economies were achieved through mass labor production, large order purchasing and transportation of materials and from central planning and control of the development.

There are few places in the United States where 202 or even 100 houses can be built in one operation. Operations of this sort call for a far larger investment of capital per contractor or building unit than the industry now has. It can operate only in communities where there is a wide and a clear-cut shortage of housing.

Presumably a local contractor could meet a local need for new construction relatively quickly if he could carry on large scale operations. Then he would be forced to transplant his activity to new and unfamiliar areas. This would result in a prohibitive increase in overhead costs. Furthermore, large scale operations are most efficient when suitable land for building is available in a large block. Otherwise the cost of assembly might be excessive. From the contractor's point of view the risks of large scale operations would increase. Selling would be more expensive.

It must be concluded that cost reduction possibilities from mass operations are extremely doubtful. Individual instances of success in this regard will continue to be reported but it does not appear to be generally applicable to the need of cutting down costs for everybody.

5) Changes in the Distribution System

At the present time distribution is for the most part made from the producer to the jobber to the contractor to the home owner. While this undoubtedly is costly, it is the product of evolutionary growth within the industry itself. Over a period of time it is unlikely that the distribution part of the building supply business turns in excessive profits. High distribution costs reflect the non-repeat nature of the building materials business and the large inventory expenses necessary to carry a wide range of competing products of varied sizes and styles.

Perhaps the entire building industry might be able later to get together and work out a more efficient distribution system, but as a practical matter this is now impossible.

6) Use of More Labor Saving Devices on the Building Site

Any development of this sort which would show worthwhile savings is bound to meet the opposition of the building trade unions. Contractors have not as yet been able to fight such opposition.

....

This discussion does not offer much hope that building costs will be reduced to a point which would permit the current building cycle to move upward without the retarding influence that high costs now exert.

Another possibility of reducing costs, and for the long run a more hopeful one, will be discussed in another section of this study dealing with factory production of houses and standardized house parts. However, practical possibilities for making a change in residential costs do not appear to be available soon enough to eliminate the resistance to operations that we are already beginning to see from the sharp increase in costs of the last few months.

Low Cost Housing

We have commented at length upon our practice of providing housing for the middle and low income groups from the second-hand market. This process can be applied up to a certain point without creating a social problem. But when this practice is considered in connection with the fact that one-eighth of our rental families must pay under $10 per month for rent, the background of our slum areas becomes evident. We cannot expect that wage increases will take care of this problem. The startling fact is that there is a part of our population too poor to pay for housing which measures up to the standards of minimum decency. For this group there does not appear to be much choice. They must either live under substandard conditions or society must pay part of their cost of living.

It is extremely doubtful that decent housing can be provided by private enterprise for this submerged part of our population. A report of the New York State Board of Housing in 1932 showed that only 1.7% of all of the apartments built in New York during 1927/30 rented for less than $12.50 per room. Low cost housing at $10 or even $5 monthly rental per room will not do for this income class. On the average this group contained more than five persons per family. The problem seems to lead to a subsidy in one form or another.

There has been considerable publicity given to various examples of low cost housing in the last few years. As examples of housing for the low income class these projects have not been very successful because their occupants have not been restricted to the low income groups. Too many people of relatively high incomes crowded into them in order to save money for other purposes.

If selection for occupancy in these dwellings is made entirely on the basis of need it may result in dangerous class consciousness. It leads to difficulties in the local political machine. Housing which is handed out by the Government is not conducive to the development of individual responsibility. The civil war that raged in Austria in 1933 around the famed Vienna apartments is an example of what can happen if the Government becomes too paternalistic in its housing developments.

The problem of low cost housing is more of a social problem than one having a direct bearing on the outlook for the building supply companies. It is sufficient to say that if we could build for the middle income groups it would relieve even the very lowest group because better housing now occupied by the average group would be passed downward to them. If a government subsidy is necessary to provide minimum shelter requirements, it would decrease the necessary expenditure.

The Federal Government has no clear-cut policy with respect to low cost housing. Numerous pieces of legislation since 1933 have appropriated money for such developments, but the intent of the legislation was to stimulate general recovery, rather than to carry out a general housing policy. The Reconstruction Finance Corporation was given the power to lend money for self-liquidating projects of low rental housing. The Public Works Administration set up by the National Industrial Recovery Act included low cost housing in its approved projects. While housing was not the primary objective of the Rural Resettlement Administration considerable money was expended in connection with the administration of that Act. All of the authorized expenditures for low cost housing by all of these Acts probably does not exceed $200,000,000. No account is here taken of the Federal Housing Administration and the Home Owners Loan Corporation.

The Wagner Bill which is before Congress at the present time, has for its purpose the establishment of a Federal housing policy. The bill as it now stands would set up local housing authorities to receive long term loans and direct subsidies for the purpose of erecting housing for the low income class. It is quite probable that this act will be amended before it becomes a law but in whatever form it appears it will permanently commit the Federal Government to the low-cost housing field.

Prefabrication

A few years ago prefabrication was hailed as the answer to the housing problem. Its more enthusiastic followers expected it also to establish a new industry which would lead us out of the depression. There has been a signal failure to achieve these results. We no longer hear that prefabrication will immediately provide us with houses at half the cost of the conventional ones and twice as good. It seems clear that the forecasts of a few years ago will not be realized. It seems equally clear that prefabrication as a technique will exert its influence on dwelling house construction for some time to come.

The prefabricated house was to be a building made out of standard factory-built units assembled in any pattern at the site of construction. It was to be a very efficient house. Through elimination of expensive field labor and savings from factory production it was to be a cheap house. It was to be replaceable and removable.

The essential difference between a conventional and a prefabricated house is primarily one of method of assembly. A house is a structural frame covered on both the inside and outside. In the conventional method the frame is made and the covering is applied on the job. In prefabrication the structural frame and its covering are made in a factory. The completed sections are then shipped to the site of construction and put together. The savings of the prefabrication process come from:

1) Shop assembly is cheaper because it permits the use of materials and processes which cannot be employed on the job site. Increased capital equipment can be used to stamp out or roll out a superior product.

2) Savings on the construction site -
    a) Decreased labor expense.
    b) Replacement of the cut-try-and-cut-again method.
    c) Decreased cost in handling materials.

The blunt truth is that prefabrication as it was conceived originally has been a failure. It is pertinent to inquire why the practical results did not measure up to the theoretical possibilities:

1) The prefabricators assumed that it would be necessary to turn the building industry inside out. Single organizations were to combine fabrication, selling and assembling of dwelling units. There was no attempt made to utilize the existing framework of the industry. Consequently, there was no way to achieve the mass production that was essential. If the existing structure of the industry is not used then the prefabrication industry must start off fully grown. It will have no opportunity to go through a period of growth.

2) Unorthodox treatment of the housing unit has not been accepted by the public. Demonstrations of the prefabricators' art led to many visitors but few purchasers.

3) Passive attitude of architects and building supply companies. When there are signs that prefabrication will be a success labor will join these two groups in firm opposition.

4) Unless the existing framework of the industry is used it will be necessary to set up a new marketing system. So long as the public does not accept the factory job as readily as the conventional one, consumer resistance will probably make marketing expenses higher than at present. This factor alone would have prevented success, even if the fabricating problems had been successfully handled.

Most items used in house construction today are shop fabricated, except the structural shell. Only the simplest and largest parts, such as floors, partitions and walls have escaped this tendency. Housing fixtures and accessories have generally yielded to the factory technique. All of this has proceeded naturally and easily without extreme dislocation in the industry.

It seems logical to believe that the extensive research work now going on concerning the factory process may result in the application of factory technique in some degree to the larger structural parts of the house. If research is successful in gradually incorporating such a development into the existing framework of the industry significant contributions might be made to cost reductions. While this may be in part a pious hope it appears to be in the long run the only possibility of reducing housing costs to our ability to pay. There are no grounds for believing, however, that this evolutionary development, if it continues, will make any great difference in the present building cycle.

Building Finance

During the boom of the past decade financing and construction methods were unsound. While they temporarily boosted building volume they brought considerable harm later on. Methods were short-sighted in many ways -

1) Lenders paid little attention to the borrower's ability to pay the amount of the mortgage. The imporrtant thing was the appraised value of the property in relation to the loan. Appraisals were frequently fictitious.

2) Most mortgages were short term. Few borrowers could liquidate within three or five years, which was the usual maturity. This not only subjected borrowers to excessive renewal fees and left them at the mercy of the money market, but it assured a general crisis for creditors and debtors alike when the business cycle had turned downward.

3) First mortgages were made so conservatively that they defeated themselves. Few builders can make a down payment of 50%. Borrowers were driven to use second mortgages. Interest, fees, and discounts on this method of financing made the cost so high that it materially weakened the borrower's ability to meet his obligations.

4) Borrowers and lenders did not give enough attention to quality of construction. Many real estate developments were poorly built.

5) Financing hotels, apartment houses, and office buildings was so easy that frequently projects were built to give the contractor a profit and the finance house a fee.

These practices reached their highest point of unsoundness in the flotation of real estate mortgage bonds and certificated mortgages. The money market accepted uncritically a huge volume of this type of financing. Much non-residential building of the period 1925-1929 bore little relationship to the demand for building space. The result was an unusually high loss ratio for those who purchased these obligations.

We have not thus far found a type of obligation that will finance on a sound basis the large volume of speculative building financed on an unsound basis in the twenties by the use of these methods. Until we do so, construction will have difficulty in recovering to previous levels.

A low ratio of a mortgage loan to the property securing it cannot assure safety for the borrower or the lender in a critical period, when practices such as these are prevalent. Mortgage security is based upon the belief that the pledged property can be sold, if necessary, to cover the amount of the loan. In the twenties the factors which influenced the general real estate market were not considered in calculating a safety factor.

One of the important characteristics of the real estate market is that only a small percentage of the total dwelling units standing are turned over each year. The demand side of the market is relatively inelastic. Demand is not materially increased by a minor decline in price. The inevitable effect of short maturities was to increase the supply of houses coming into the market at the very time when demand was most restricted. It became quite apparent that the financial practices which were calculated on foreclosure of a single home in a normal period were unsound because they forced foreclosure on many homes at a time of general deflation.

The maladjustment of supply and demand in the housing market drove values down to a point where even the most conservative mortgages were in danger. Finally, it became impossible to sell at any price.

It is pertinent, therefore, to inquire as to the steps taken to eliminate the practices of the last cycle which later led to so much trouble. Obviously the solution is not more conservative loans. This would restrict the buyers' market even more than it is now restricted by advancing building costs. Mortgage lending practices must be built around the principle of decreasing the need for use of the foreclosure process. We must increase the chance that mortgage loans will be repaid rather than increasing the security in case they are not paid.

There has been considerable legislation in the last five years to improve financing practices. The first important Federal law was passed in 1932 when a Federal Home Loan Bank system was set up. The long range objective of this law was to make mortgages more liquid by setting up a rediscount process. Amendments were made to this law and new legislation was passed for the immediate purpose of meeting the emergency. Chief among these was the Home Owners Loan Corporation which saved many homes from foreclosure. Government funds were made available to finance mortgage companies. Savings and loan shares were insured in a way similar to the method established for banking deposits.

By far the most important piece of legislation was the National Housing Act. Part of the provisions of this Act, such as the provision insuring loans for repair and modernization, were temporary measures to stimulate a revival of activity. The most important part of the Act established the insured mortgage as a financial device. According to the last report made, about 55% of the new home mortgages of the country were being insured under the provisions of this Act. The beneficial results of this legislation on the whole field of mortgage finance can be summarized:

1) Better understanding of the principles and advantages of the long term monthly payment plan.

2) Revival of the desire for home ownership.

3) Education of prospective home owners in better architecture, worthwhile construction and neighborhood standards.

4) Individual credit standings and ability to pay have become more important factors than the ratio of loans to appraised value.

5) The monthly payment plan has been extended to cover taxes and fire insurance premiums.

Financing costs have been reduced. There has been a small net reduction in interest rates. The bulk of the savings, however, have come from the elimination of excessive fees and discounts. The discount facilities of the Federal Home Loan Bank system, together with monthly amortization, have combined to give mortgages a liquidity they have never had before.

Building Industry in England

It is a matter of common knowledge that the building industry in Great Britain has contrasted favorably with building performance in the United States. Contrary to the experience in this country building has lead recovery, having been one of the main contributors to a rise in purchasing power which has carried general activity along with it. In the United States building has trailed the increasing general industrial activity. In fact building did not turn up until other elements in the economy had substantially increased public purchasing power.

Great Britain began a planned attack on its housing problem in 1919. The shortage of houses at the close of the War provided the impetus for this development but its background extends into the past for nearly a century. Various efforts were made and laws passed as early as 1830 to do something about the low housing standard which England inherited from the Industrial Revolution. Most of these were of the philanthropic type which did not succeed in making anything better than a mere indentation in the problem.

By the close of the War the housing problem had become one of general recognition, so that it became politically expedient to do something about it. Perhaps it would be more nearly correct to say that it became politically inexpedient not to do anything about it. This contrasts with the prevailing American attitude where the initial efforts of the Administration in the housing field have been based upon its notions of social value and the possible contribution of building activity to recovery. Housing in this country has not yet reached a point where there is a widespread and insistent demand that the Government "do something about it".

England began its political attack on the housing problem in 1919 when it passed the Addison Act which granted a subsidy to municipalities for housing developments. This act was unsatisfactory and was repealed in 1921 to be followed by major housing legislation in 1923, 1924, 1930 and 1935. The record of construction under these acts and by private means is as follows:

Houses Built in England and Wales since 1919

Years to Sept. 30	Addison Scheme 1919 Act	Chamberlin Scheme 1923 Act	Wheatley Scheme 1924 Act	Slum Clearance 1930 Act	Private Construction	Total
1919					30,000 est.	210,237
1920	6,127					
1921	67,945					
1922	106,165					
1923	24,998	991			52,749	78,738
1924	5,525	30,934			73,032	109,491
1925	1,497	78,409	12,385		66,735	159,026
1926	975	84,431	46,489		65,689	197,584
1927	527	115,073	97,316		60,313	273,229
1928	30	47,969	53,792		84,624	166,415
1929	18	80,240	53,516		71,083	204,857
1930	14		51,310		110,375	161,699
1931			61,615	420	139,909	194,944
1932			62,530	5,146	132,886	200,562
1933			44,131	6,302	167,880	218,313
1934			37,214	15,046	261,168	313,428
1935				32,912	283,453	316,365
1936					274,348	339,538

From January, 1919, through the housing year ending September 30th, 1936, England built about 3,144,000 dwelling units. This is about 25% of the total number of units now standing.

England has built about 55% of all of the units constructed since the close of the War in the last seven years. This is a record unparelled in the housing developments of any other nation. It has been stated that it was "...perhaps the largest public achievement of any country in the world since the War..."*

While England was achieving this outstanding record, what was the United States doing? This country, with three times the population, built only one-third as many houses. A much smaller proportion of houses now standing in the United States comprises new units added since the War. Whereas the general housing standards in Britain have advanced, ours have declined. Taking the nations as a whole, England is now much better housed than in 1929 and our nation is much more poorly housed.

* Lewis Mumford, housing authority.

Measured by American standards of desire for fixtures and equipment in a new house, the three million new units in Great Britain perhaps are inferior; but these units measure up to minimum standards of health and decency in a superior way. There is a standard type of house plan to which British building tends to conform. None of the units contain less than four rooms. Not a very high proportion have central heating. There is no basement. Kitchens are generally small. Gadgets are reduced to a minimum in a way that would be unacceptable to American home builders; but the typical unit conforms to high standards of healthful surroundings, sanitation and space requirements for sunlight and ventilation. They are located within reach of work. Few apartments were subsidized; most units are cottages in the country. About two-thirds of the three million units have gardens. Most important of all is the fact that this high housing standard has been made available to the low income groups. About 90% of these three million units cost, including land, less than $4,000; 60% cost less than $2,500.

England's housing trends reflect a national housing policy resting on two important factors:

1) Use of public funds and public credit where necessary.

2) Use of new techniques and better organization to reduce costs and improve the quality of housing.

Public credit was first utilized in the 1919 Act to stimulate the industry. There was frequent housing legislation during the twenties, the last major acts being the Slum Clearance Act of 1930 and The Overcrowding Act of 1935. It is important to note, that the real boom in British building - that of the last seven years - has been mostly a private building boom. Before 1930, 35% of total units built were privately financed. After 1930 the proportion increased to 78%.

In England some progress has been made toward the development of an integrated building industry. Even more than this - we can say that there was an integrated attack on the building problem not only by the construction industry, but by all other agencies that have an important stake in the building picture, such as taxing and financing. The industry is not so much one of small businesses with wasteful practices as in the United States. With higher efficiency and lower costs British building has achieved considerable progress as a mass production industry.

Other significant factors in building costs are:

1) Lower land costs because the cost of assembling land for projects is much less in Britain than it would be on the edge of cities in the United States. The reason for this is that the land is held in larger parcels. English real property is taxed according to its income rather than according to its capital value.

2) Lower unit labor costs. Labor costs amount to from 30% to 35% of the total cost of construction. This does not differ materially from the proportion of labor costs in American housing, but on an hourly basis there is a great difference. Skilled labor receives around 40¢ per hour.

3) The financial structure has achieved a high standard of efficiency under the leadership of the great "building societies". Ordinarily these building societies lend up to 80% of the value of sales price of the property. The going interest rate during the twenties was 6%, but it has now been reduced to 4½%, with a further reduction to 4¼% in a few places.

   These building societies are now lending 95% of the property cost, but the 15% excess over the standard 80% mortgage is guaranteed by the builder. Some have questioned the wisdom of such large advances, but the building societies rely for protection upon very careful scrutiny of the standing of the purchaser of the property and the builder who guarantees the additional 15%. The British home mortgage borrower is a superior credit risk because he is not affected by temporary considerations when he purchases the home. All mortgages are amortized monthly or weekly.

4) Building costs declined about 10% from the late twenties to 1932 when the private building boom started.

It must be kept in mind, however, that a British house costing $2,500 does not imply the same type of house that $2,500 implies in America. Its general standards for healthful living are superior, but the absence of some things that we consider essential does not permit a direct comparison of average costs per dwelling.

It has been estimated that a more or less standard type of house will cost from $1,250 to $1,500 to build. The building supply expenses for a comparable house in the United States would not differ very much, but the additional features that the American builder

would insist upon, such as a basement and central heating, would add another $1,200 to the cost; and added labor at higher rates would increase the cost still further by $1,000 to a total of $3,700.

Summary

"The Economist" has stated that British consumers after 1927 had more money to spend on housing because of a gap between the cost of living and national income. Between 1927 and 1932 the total of wages and salaries decreased $320,000,000. In the same period expenditures on food, clothing and other necessities fell $1,500,000,000. This increased the effective purchasing power for housing.

A second reason for the British building boom is that the organization of the industry was such that not much of this purchasing power was offset by higher building costs. Unlike the United States, the industry builds houses for occupancy by the lower income groups.

In short, the boom has continued in Great Britain because it continues to be as cheap to build as to rent.

SUMMARY - RESIDENTIAL SECTION

No better summary of the disabilities of the building industry has been made than the following one from "Fortune":

"...And from beginning to end.....less organization and less control is shown than in a child's game of marbles. A prospective owner appears with a few descriptive sentences, maximum figure and a photograph of a fireplace in Salem, Massachusetts. On this basis...the architect concocts a plan. The plan is submitted to four or five general contractors whose chief skill consists of their ability to add up the bids of sub-contractors, make a charge for their overhead and submit....money is then secured from a bank which submits the plans to someone who has built houses before to guess at the cost....The actual building is done under the supervision of a man who is also building several other houses at the same time and who has no schedule worked out for any of them.... labor is supplied by unions which refuse to assemble materials by any method not mentioned in their by-laws. Meantime, the plans and work are submitted to the ignorant and usually dishonest inspection of the city authorities who apply to the structure a building code found inadequate in 1910; and the owner finds himself the executive head of a loose and temporary organization with the architect in the role of company attorney, the various sub-contractors in the roles of department heads, and his family installed as rebellious minority stockholders..."

Our housing problem is not lack of building activity during a depression period, except temporarily. Nor does the housing problem consist of the physical condition of American dwelling units or the fact that housing does not generally have the improved accessories that have come to be associated with the modern dwelling unit. The real housing problem consists of the fact that housing is going backward instead of forward in the United States. Put differently, our inability to build for the middle and low income groups means that we do not add dwelling units fast enough to maintain the present average age of our houses. This is not a temporary or a depression phenomena - it is a long term trend.

THE OUTLOOK FOR BUILDING STOCKS

The construction industry uses a wide variety of materials. Large construction projects of the heavy engineering or public works variety usually use large amounts of cement, steel, and lumber. Residential building uses more lumber than any other division of the industry. It is the major market for roofing, paint, plumbing, wallboard, and similar products, and is a minor market for cement and steel. Large buildings, such as hotels, apartments, and office buildings, use all of these materials.

Many concerns have a variety of products which permit them to share in the markets for nearly every type of construction. In others the sales volume follows the trend of one type of construction. Cement companies depend chiefly upon heavy construction and public works; the building supply companies on the residential division; the elevator companies on tall buildings. Some companies, such as the paint and lumber concerns, sell their products to nearly every division.

In analyzing the outlook for any concern the cyclical fluctuations of the division of the construction industry which provides its major markets must be kept clearly in mind. Not only the products but the operating problems of these concerns differ. Merchandising and distributing methods vary. In some divisions, such as cement, roofing, and to some extent wallboard, competition sometimes leads to price instability. In other divisions, such as elevators, plumbing, heating and paint -- prices are generally maintained at satisfactory levels.

The building cycle pursues its course largely independent of movements in the general business cycle. It follows, therefore, that stocks which market their products to the building industry will experience corresponding fluctuations in their sales volume. Not only will the upward or downward phases of their sales and earnings be longer than that of the average business concern, but the amplitude of change will be two or three times as great. Price fluctuations of building stocks are wide. The irregular earnings records that are inherent in the cycle make most building stocks speculative for permanent retention. If the characteristics of the cycle are clearly understood, however, commitments in the better grade building stocks can be made at the bottom of the cycle with a minimum of speculative risk.

Building shares are prompt to discount any anticipated change in sales volume. In a period of rising building activity these stocks characteristically sell at high price earnings ratios and yield low returns. Anyone who buys these stocks early in the cycle purely for the reason that the upward phase continues for several years, once direction is established, may find himself paying prices for the securities which will be justified only by extended holding. Selection is always necessary, but it is especially so at that phase of the cycle when conditions are still depressed, but when it is generally apparent that the upward phase has begun.

Early this year building stocks were largely in that category. The upward phase of the cycle has been established and can be expected to continue until the early 1940's. Prices of the stocks of these concerns discounted this improvement. It was not surprising, therefore, that a corrective movement started during a time when the rest of the market was generally strong. The position of the leading stocks at their high prices of this year compares with the peak earnings of each concern in the last cycle:

	Highest Net Income (000 omitted)	Per Share	Year	Highest Price of Stock	Year	1936 Earnings Net Income (000 omitted)	1936 Earnings Per Share	High Price 1937	Price May 8,1937
Alpha Portland Cement Co.	$ 3,814	$6.20	1926	54 7/8	1929	$ 862	$1.34	39 3/4	28 1/2
American Radiator & Standard Sanitary Corp.	20,566	2.27	1928	55 3/8	1929	7,379	.70	29 1/2	22
Armstrong Cork Co.	4,814	4.00	1929	76	1929	5,277	4.36	70 1/2	62
Barber Co., Inc.	2,001	8.12	1926	95 1/2	1927	444	1.14	43 3/8	32 5/8
Celotex Co.	1,478	5.43	1929	79 3/8	1929	736	2.20	48 1/4	41 3/4
Crane Co.	11,558	4.42	1929	*73	1924	5,685	2.03	56 1/2	48 1/2
Glidden Co.	2,941	4.45	1929	64 1/8	1929	3,085	3.29	51 1/2	42 3/4
Holland Furnace Co.	2,202	4.85	1929	51	1929	1,383	2.89	52 3/4	39 1/2
Johns-Manville Corp.	6,591	8.09	1929	242 3/4	1929	4,373	5.13	155	131 1/2
Lone Star Cement Corp.	5,149	7.90	1928	102 3/4	1929	2,829	2.96	75 1/4	55 1/2
Minneapolis-Honeywell Regulator Co.	1,437	#2.70	1929	41	1929	3,158	4.78	120	105
Pittsburgh Plate Glass Co.	11,644	5.37	1929	75	1929	15,321	7.15	147 1/2	124
Sherwin-Williams Co.	6,019	8.26	1929	105	1929	5,887	8.04	154 3/4	133
U. S. Gypsum Co.	8,414	10.41	1925	**205	1925	5,328	4.03	137	113 3/4
Yale & Town Mfg. Co.	2,585	5.31	1929	88	1929	1,211	2.49	62 1/2	51 7/8

* 1929 high was 48
# adjusted to reflect a 3 for 1 stock split
** stock dividends totaling 60% were paid at various times after 1925.

Most of these concerns reported peak earnings in 1929, although this was not always the case. The highest prices for the stock of each company generally came about the time that earnings were at their highest levels.

When 1936 earnings of each company are compared with the peak of the last cycle it becomes apparent that uniform progress has not been made. A few concerns have exceeded the highest earnings of the last cycle. For the most part, however, they are considerably below their previous records. In February of this year prices of the stocks of the leading building supply companies reached their highest prices of the current cycle. If allowance is made for some concerns whose outlook definitely is poorer than it was in the last cycle and for others whose outlook, due to expansion of markets, is definitely better, the level of prices for these issues was too high. They were high not only in relation to 1936 earnings, but with respect to the peaks of the 1920 cycle. For the most part the market had discounted improvement too far in advance. This is the background for the partial correction which has already taken place.

Care must be exercised throughout the remainder of the building cycle to avoid building stocks when they sell out of line with the improvement that reasonably can be expected. When properly priced these stocks appear to have a favorable outlook for several years.

CONCLUSIONS

Our accumulated housing needs are enormous. In the last seven years we have built only a small portion of our residential requirements to care for new population alone. The rising tide of employment is again bringing a population shift from farm to urban areas. As the national income expands more families are lured by the attractiveness of modern residential structures. Financial practices for building have been improved. Residential vacancy figures are beginning to have an ominous sound in many cities. Rents advance month by month.

When the building cycle changes direction it holds to its course for several years. This assures an increasing volume of business for the building supply companies for sometime to come. We are now in the fourth year of the upward phase of a cycle the peak of which will not come until the 1940s.

These factors are being widely translated into unrestrained optimism for the building supply companies. But there are clouds on the horizon. It appears that this unrestrained optimism will have to undergo some deflation. These clouds spring from causes which lie deep in the organization of the building industry. Faced with a huge demand for its product, the industry is disorganized and inadequate. In spite of our needs it appears that the total amount of building and the peak of the current cycle will not exceed, nor perhaps even come up to the level of the last one. There are many reasons for this:

1) Local labor shortages are now being reported. Building has advanced only half way to previous boom years. It may be correct that these local shortages are "artificial", but it seems clear that labor supply is not ample to lift building to levels commensurate with our needs. Wage rates are responding to scarcity, and thereby adding further to the basic problem of the industry - costs.

2) Costs are advancing faster than purchasing power. The Bureau of Labor Statistics has reported that its index of building material prices was 96.6 on April 3,

as compared with an average for the month of December, 1936, of 89.5. Such sharp advances, regardless of their cause, will have an inevitable affect on construction volume.

3) Building is closely associated with the creation of debt. We start a new building cycle with a real estate debt level about 100% higher than in the early 1920s. Our public debt has more than offset deflationary write-offs in the private debt structure. Our long term debt totals, both public and private, are at the highest point in our history.

4) The magnitude of the deflation after 1929 made it impossible to shift properties from "weak" to "strong hands" through the foreclosure process. The activities of the Home Owners Loan Corporation supplemented by forbearance on the part of the great lending institutions saved many properties. The real estage market, therefore, was not cleaned up. This will act as a brake on the market until these properties are placed in permanent hands.

5) The upturn in building after the post-war depression was aided by a decline in food costs. This permitted the increasing rental scale to exert a full degree of stimulation on new building. This gap in the cost of living favored the rental scale and thereby encouraged people to build. In the current cycle, however, costs are advancing and competing with higher rents for the consumer's dollar. As rents continue their advance there will be an increasing demand for Governmental intervention.

Our building needs are so great that these hurdles will, to a degree, be taken in stride. They cannot fail to limit the size of the current cycle, however. It is quite necessary, therefore, to appraise the outlook for the building supply companies not on the basis for potential need for new building but on the ability of the whole industry to meet that need.

TOTAL CONSTRUCTION 1925-1936

Estimates of Works Progress Administration
(millions of dollars)

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Residential	1,355	819	455	488	465	1,329	1,768	2,958	4,193	4,044	3,958	4,166
Non-Residential	625	534	481	375	344	823	1,804	2,564	2,334	2,305	2,495	2,239
Alterations & Repairs	555	429	236	220	189	249	315	285	311	304	259	250
Total Private Construction	2,535	1,782	1,172	1,083	998	2,401	3,887	5,807	6,838	6,653	6,712	6,655
Private Utilities	1,160	807	608	499	745	1,458	2,212	2,195	1,957	1,990	1,866	1,757
State & Local Public Works	2,956	2,105	2,181	1,489	1,493	2,222	2,540	2,295	2,365	2,289	2,073	2,110
Federal Construction(regular)	186	248	187	300	368	352	294	238	197	165	150	155
Federal Construction(Emergency)	208	301	364	41	-	-	-	-	-	-	-	-
Total Federal Construction	394	549	551	341	368	352	294	238	197	165	150	155
Grand Total	7,045	5,243	4,512	3,412	3,604	6,433	8,933	10,535	11,357	11,097	10,801	10,677

Federal Grants & Loans included in above Totals:

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Private Building	22	54	28	7	1	-	-	-	-	-	-	-
Private Utilities	14	111	97	7	-	-	-	-	-	-	-	-
State & Local Public Works	1,436	1,108	1,482	366	143	120	105	79	81	81	85	92
Total Federal Grants & Loans	1,472	1,273	1,607	380	144	120	105	79	81	81	85	92
% Total Grand Total	20.9	24.3	35.6	11.1	3.9	1.8	1.2	.75	.71	.73	.78	.86

Distribution by Classes - %

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Residential	19.2	15.6	10.1	14.3	12.9	20.7	19.8	28.1	36.9	36.4	36.6	39.0
Non-Residential	8.8	10.2	10.6	11.0	9.5	12.8	20.2	24.3	20.5	20.8	23.1	21.0
Alterations & Repairs	7.9	8.2	5.2	6.4	5.2	3.9	3.5	2.7	2.7	2.7	2.4	2.3
Total Private Construction	36.0	34.0	26.0	31.7	27.7	37.5	43.5	55.1	60.2	60.3	62.1	62.3
Private Utilities	16.5	15.4	13.5	14.6	20.7	22.7	24.8	20.8	17.2	18.0	17.3	16.4
State & Local Public Works	41.9	40.1	48.3	43.6	41.5	34.6	28.5	21.8	20.8	20.7	19.2	19.7
Federal Construction(regular)	2.6	4.7	4.1	8.8	10.2	5.5	3.3	2.3	1.7	1.5	1.4	1.4
Federal Construction(emergency)	3.0	5.8	8.1	1.2	-	-	-	-	-	-	-	-
Total Federal Construction	5.6	10.5	12.2	10.0	10.2	5.5	3.3	2.3	1.7	1.5	1.4	1.4

TREND BY CLASSES

Average - 1925-28 = 100

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Residential	33.1	20.0	11.1	11.9	11.4	32.5	43.2	72.3	102.5	98.9	96.8	101.8
Non-residential	26.7	22.8	20.5	16.0	14.7	35.1	77.0	109.4	99.6	98.4	106.5	95.6
Alterations & Repairs	197.5	152.7	84.0	78.3	67.2	88.6	112.1	101.4	110.7	108.2	92.2	89.0
Total Private Construction	38.6	27.4	18.4	17.0	15.8	36.7	58.8	87.4	102.7	99.1	100.0	100.0
Private Utilities	61.3	42.6	32.1	26.4	39.4	77.0	116.8	116.0	103.4	105.1	98.6	92.8
State & Local Public Works	133.8	95.3	98.7	67.4	67.6	100.6	115.0	103.9	107.1	103.6	93.8	95.5
Federal Construction(regular)	111.4	148.5	112.0	179.6	220.3	210.8	176.0	142.5	118.0	98.8	89.8	92.8
Federal Construction(emergency)	-	-	-	-	-	-	-	-	-	-	-	-
Total Federal Construction	235.9	328.7	329.9	204.2	220.3	210.8	276.0	142.5	118.0	98.8	89.8	92.8
Grand Total	61.1	47.7	41.1	31.1	32.8	58.6	81.3	95.9	103.4	101.0	98.3	97.2

VALUE OF CONSTRUCTION

F. W. Dodge Corp.

Construction Activity in 37 Eastern States
(in millions & tenths of millions of dollars)

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Commercial buildings	249.1	164.5	150.6	99.4	122.7	311.1	616.3	929.2	884.6	932.9	920.9	872.4
Factories	198.0	108.8	116.1	127.5	43.5	116.2	256.6	545.9	508.8	375.9	471.2	326.6
Educational buildings	226.1	173.4	117.5	40.0	82.3	228.8	376.1	381.9	399.0	379.8	381.1	426.4
Hospitals & Institutions	74.1	47.1	37.3	37.3	48.4	121.2	163.1	152.2	164.7	162.5	133.1	111.1
Public buildings	102.2	97.8	55.7	50.9	118.0	181.3	139.8	120.8	76.2	79.5	67.2	54.5
Religious & Memorial	28.2	23.7	18.3	17.7	27.3	53.1	92.8	106.1	127.9	156.5	148.8	153.1
Social & Recreational	75.4	60.2	46.6	31.1	38.7	98.7	113.3	140.0	214.1	260.7	247.1	248.7
Total non-residential	953.2	675.5	543.0	403.9	480.9	1110.4	1758.0	2376.1	2375.3	2347.8	2369.4	2192.8
Residential	801.6	478.8	248.8	249.3	280.1	811.4	1101.3	1915.7	2788.3	2573.3	2671.1	2747.7
Total Building	1754.9	1154.3	791.8	653.2	761.0	1921.8	2859.3	4291.8	5163.6	4921.1	5040.5	4940.5
Public Works	714.1	578.5	625.0	499.5	514.7	875.4	963.0	934.4	980.1	962.2	775.6	650.6
Public Utilities	206.3	111.7	126.1	103.2	75.6	295.7	700.7	524.5	484.4	419.8	564.7	415.4
Total Construction	2675.3	1844.5	1543.1	1255.7	1351.2	3092.8	4523.1	5750.8	6628.3	6305.1	6380.9	6006.4

Distribution by Classes - %

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Commercial buildings	9.3	8.9	9.7	7.9	9.1	10.0	13.6	16.1	13.3	14.8	14.4	14.5
Factories	7.4	5.9	7.5	10.1	3.2	3.7	5.7	9.5	7.7	6.0	7.4	5.4
Educational buildings	8.4	9.4	7.6	3.2	6.1	7.4	8.3	6.6	6.0	6.0	6.0	7.1
All other non-residential	10.5	12.4	10.4	11.0	17.2	14.8	11.3	15.4	8.8	10.4	9.3	9.5
Total non-residential	35.6	36.6	35.2	32.2	35.6	35.9	38.9	47.6	35.8	37.2	37.1	36.5
Residential	29.9	25.9	16.1	19.8	20.7	26.2	24.3	33.3	42.1	40.8	41.8	45.7
Total Building	65.5	62.5	51.3	52.0	56.3	62.1	63.2	74.6	77.9	78.1	79.0	82.2
Public Works	26.7	31.3	40.5	39.8	38.1	28.3	21.3	16.2	14.8	15.2	12.1	10.8
Public Utilities	7.7	6.0	8.1	8.2	5.6	9.6	15.5	9.1	7.3	6.7	8.8	6.9

Trends by Classes - (Average 1925-28 - 100)

	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
Commercial buildings	27.6	18.2	16.7	11.0	13.6	34.5	68.3	102.9	98.0	103.3	102.0	96.6
Factories	47.0	25.9	27.6	30.3	10.3	27.6	61.0	129.8	121.0	89.4	112.0	77.6
Educational buildings	57.0	43.7	29.6	10.1	20.8	57.7	94.8	96.3	100.6	95.8	96.1	107.5
All other non-residential	46.5	38.0	26.4	22.8	38.6	75.5	84.6	86.3	96.9	109.6	99.1	94.3
Total non-residential	41.1	29.1	23.4	17.4	20.7	47.8	75.7	102.4	102.3	101.1	102.1	94.5
Residential	29.7	17.8	9.2	9.2	10.4	30.1	40.9	71.1	103.4	95.5	99.1	101.9
Total Building	35.0	23.0	15.8	13.0	15.2	39.3	57.0	85.5	102.9	98.1	100.5	98.5
Public Works	84.8	68.7	74.2	59.3	61.1	103.9	114.4	111.0	116.4	114.3	92.1	77.2
Public Utilities	43.8	23.7	26.8	21.9	16.0	62.8	148.7	111.3	102.8	89.1	119.9	88.2
Total Construction	42.3	29.1	24.4	19.8	21.3	48.9	71.4	90.8	104.7	99.6	100.8	94.9

HOUSING AND POPULATION

	Zanesville Ohio	Dallas Texas
Population increase 1890-1930 (%)	73	510
Dwelling Units:		
Single family dwellings (% of total)	71.8	67.9
Apartment dwellings (% of total)	4.1	6.6
Vacancies (%)	8.1	7.0
Units owner-occupied (%)	47.0	34.2
Density:		
More than adequate (% of families)	64.1	49.2
Adequate	22.3	27.5
Crowded	12.6	20.3
Overcrowded	1.0	2.9
Condition of Housing:		
Good	30.6	36.7
Minor Repairs	48.4	44.8
Heavy Repairs	19.3	15.8
Unfit for Habitation	1.6	2.6
Housing Values - Owner Occupied:		
Under $1,000 (% of total units)	9.1	9.3
Under $2,000 "	31.9	27.1
Under $3,000 "	53.5	45.3
Under $5,000 "	77.0	67.9
Rental Distribution:		
Under $10 per month (% of total)	30.1	14.9
Under $20 "	75.8	49.6
Under $30 "	93.4	74.8
Under $50 "	98.6	92.5
Age of Houses:		
Under 10 years (% of total)	16.2	35.0
Under 20 years "	29.6	71.0
Under 30 years "	46.5	87.3
Under 50 years "	74.7	98.8

ESTIMATED EXPENDITURES FOR BUILDING CONSTRUCTION IN 257 IDENTICAL CITIES

Year	New Residential	New Non-Residential	Additions Alterations & Repairs	Total
1921	$ 937,000	$ 636,000	$283,000	$1,856,000
1922	1,612,000	876,000	297,000	2,786,000
1923	2,001,000	1,071,000	360,000	3,431,000
1924	2,070,000	1,138,000	300,000	3,508,000
1925	2,462,000	1,344,000	233,000	4,038,000
1926	2,256,000	1,301,000	270,000	3,827,000
1927	1,906,000	1,232,000	341,000	3,479,000
1928	1,859,000	1,136,000	310,000	3,305,000
1929	1,433,000	1,147,000	353,000	2,933,000
1930	601,000	849,000	249,000	1,700,000
1931	426,000	623,000	189,000	1,238,000
1932	103,000	276,000	102,000	481,000
1933	91,000	183,000	108,000	382,000
1934	76,000	165,000	136,000	377,000
1935	212,000	260,000	183,000	655,000
1936	473,000	332,000	238,000	1,042,000

All of the above figures have 000 omitted.

INDEXES
(1923-25 = 100)

1921	43.0	53.7	95.0	50.7
1922	74.0	74.0	99.9	76.1
1923	91.9	90.4	120.9	93.8
1924	95.0	96.1	100.9	95.9
1925	113.0	113.5	78.2	110.4
1926	103.6	109.9	90.8	104.6
1927	87.5	104.0	114.5	95.1
1928	85.4	95.9	104.1	90.3
1929	65.8	96.9	118.6	80.2
1930	27.6	71.7	83.7	46.4
1931	19.6	52.6	63.5	33.8
1932	4.7	23.3	34.4	13.2
1933	4.2	15.5	36.3	10.4
1934	3.5	13.9	45.6	10.3
1935	9.7	22.0	61.5	17.9
1936	21.7	28.0	80.0	28.5

NUMBER AND PERCENTAGE OF FAMILIES PROVIDED FOR IN DIFFERENT KINDS OF DWELLINGS IN 257 IDENTICAL CITIES

Year	One-Family	Two-Family	Multi-Family	All Classes
1921	130,873	38,858	54,814	224,545
1922	179,364	80,252	117,689	377,305
1923	207,632	96,344	149,697	453,673
1924	210,818	95,019	137,082	442,919
1925	226,159	86,145	178,918	491,222
1926	188,074	64,298	209,842	462,214
1927	155,512	54,320	196,263	406,095
1928	136,907	43,098	208,673	388,678
1929	98,164	27,813	118,417	244,394
1930	57,318	15,145	52,859	125,322
1931	48,330	11,310	38,538	98,178
1932	19,528	3,400	4,453	27,381
1933	14,437	2,124	9,318	25,879
1934	13,397	1,457	7,209	22,063
1935	31,030	3,023	21,757	55,810
1936	59,855	5,328	50,182	115,365

	Percent of All Classes			Index All Classes (1923-25 = 100)
Year	One-Family	Two-Family	Multi-Family	
1921	58.3%	17.3%	24.4%	48.5
1922	47.5	21.3	31.2	81.6
1923	45.8	21.2	33.0	98.1
1924	47.6	21.5	30.9	95.7
1925	46.0	17.5	36.4	106.2
1926	40.7	13.9	45.4	99.9
1927	38.3	13.4	48.3	87.8
1928	35.2	11.1	53.7	84.0
1929	40.2	11.4	48.5	52.8
1930	45.7	12.1	42.2	27.1
1931	49.2	11.5	39.3	21.2
1932	71.3	12.4	16.3	5.9
1933	55.8	8.2	36.0	5.6
1934	60.7	6.6	32.7	4.8
1935	55.6	5.4	39.0	12.1
1936	51.9	4.6	43.5	24.9

DWELLING UNITS PROVIDED

Year	257 Cities Population	U.S. Population	%	Family Units Provided 257 Cities	Family Units Provided U.S.	% 257 Cities to U.S. Total
1921	36,575,118	108,207,853	33.8	224,545	446,000	50.3
1922	37,511,516	109,872,675	34.1	377,305	705,000	53.5
1923	38,447,913	111,537,497	34.5	453,673	846,000	53.6
1924	39,384,311	113,202,319	34.8	442,919	872,000	50.8
1925	40,320,708	114,867,141	35.1	491,222	911,000	53.9
1926	41,257,106	116,531,963	35.4	462,214	805,000	57.4
1927	42,058,897	118,196,785	35.6	406,095	781,000	52.0
1928	42,767,125	119,861,607	35.7	388,678	736,000	52.8
1929	43,665,235	121,526,429	35.9	244,394	472,000	51.7
1930	44,850,467	123,091,000	36.4	125,322	260,000	48.2
1931	45,896,339	124,113,000	37.0	98,178	200,000	49.1
1932	46,647,939	124,974,000	37.3	27,381	80,000	34.2
1933	47,411,848	125,770,000	37.7	25,879	70,000	37.0
1934	*	126,626,000	*	22,063	60,000	36.8
1935	*	127,521,000	*	55,810	150,000	37.2
1936	*	128,429,000	*	115,365	260,000	44.4

* Not Available

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